

The
BRITISH JOURNAL
 of
TUBERCULOSIS

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EDITORIAL

For the last half-century the mortality from tuberculosis has been steadily declining, yet statistics do not show that this can be connected with any one form of treatment. The discovery of the bacillus in the early eighties and subsequent tuberculin, the institution of sanatorium treatment, pneumothorax treatment and later surgical methods of collapsing the lung have not left any specific marks upon the death-rate. At the same time modern methods of treatment have undoubtedly played a part in the decline of mortality and still more have they been responsible for increasing the patient's expectation of life.

In the case of acute disease, such as typhoid fever, treatment in hospital is required during the acute stage, and when this is over the patient can regain his health at a convalescent home and go back to his normal life in a few weeks. With tuberculosis similarly the initial hospital treatment is equally essential, but convalescence is very much longer and it may be several years before the patient is able to take up a full life, or he may never be able to do so in spite of the fact that life is often prolonged for many years. When the active stage of tuberculosis is over and the patient has left the sanatorium it is very rare for him to be sufficiently well to lead a full life. Some, however, can do so, and for these after-care is not required, although they should be kept under supervision for the next few years in order to detect early any relapse should it occur. In some cases a temporary period in a sheltered occupation is sufficient to enable the patient to go back into the world and compete in the open market. In other cases, however, he is never sufficiently restored to health to work except under sheltered conditions. A patient may obtain temporary sheltered employment at home in a few cases, or it may be possible to obtain

for him some part-time work with compensation for reduced wages, or to find him employment on the staff of the sanatorium where he received his treatment, or he may go to some settlement such as Papworth.

For most cases the Papworth Scheme is the ideal solution of the problem of after-care. There is the hospital for those who relapse, a sanatorium for those who require sanatorium treatment, and, for those who need sheltered employment, the colony, where patients can work under normal conditions without any feeling of charity.

With this number of the JOURNAL we are publishing a special supplement on After-Care and Rehabilitation, and here will be found full information about these great problems. The editors of this document started upon a study of after-care in the endeavour to find a method of completing what the sanatorium left unfinished. They discovered that treatment and after-care constituted only the physical and social aspects of one and the same problem—rehabilitation. Experience shows that in most countries there is a general trend towards a steady increase in the number of survivors after treatment. A statistical analysis comparing the results of the years 1920 and 1930 showed that the number of deaths is decreasing and the number of surviving or cured cases increasing, but there is still a considerable middle group who cannot be physically rehabilitated. This middle group, however, is being composed more and more of relapse cases, and it is hoped that many of these relapses may be prevented and so more cures obtained by a good system of after-care. It is this type of patient who is in special need of sheltered employment, and the employment of sub-standard labour is a matter of industrial research.

The problem of sub-standard labour applies, of course, equally to other conditions of physical impairment of capacity besides tuberculosis, and schemes to deal with it are striving towards the same objective, namely the ultimate balance between economic livelihood and physical conditions.

The cost to the nation of tuberculosis is considerable, but this is reduced rather than increased by providing employment for the tuberculous and supporting institutions where after-care can be given, for the patient is himself earning something, even if only a little, towards his livelihood. Apart from this consideration, such a system of after-care is a protection to the public because it prevents infection. Many a patient with persistent tubercle bacilli in the sputum cannot get work, the cost of his maintenance falls on the State, and he often lives in close contact with others who are liable to contract the disease. If he does find work he is a potential danger

to his colleagues. Again, the psychological effect of employment or of having a hobby is considerable. Patients with any chronic disease and perhaps especially tuberculosis are apt to drift into an unhappy state of indifference, and those who have not worked for three years usually find it hard to take up work again. Occupation of some sort is of the first importance even for those who are financially independent.

The old system, therefore, of sending a patient to a sanatorium for a certain length of time and then letting him return to ordinary life, should be a method of the past. Under this system a few patients remained well, but those who did not either continued at work for a shorter or longer time and then broke down or were never sufficiently well to do any work at all. These advanced cases for whom nothing can be done should if possible be segregated and be nursed in a Home for advanced cases. It is for the large middle class of cases between the patient completely cured after sanatorium treatment and the patient for whom no reasonable hope can be entertained that these various schemes for after-care which are fully discussed in the Supplement are of such vast importance.

GENERAL ARTICLES

A CASE OF CONGENITAL TUBERCULOSIS

BY DOROTHY PRICE,

M.D.

Physician to St. Ultan's Hospital, Dublin

THE infection of infants during the first three months of life by the tubercle bacillus usually occurs by the inhalation route with primary lodgement in the lung. Rarely, however, there occurs an infection *in utero*, which is conditional on the circulation of tubercle bacilli in the blood stream of the mother. In these cases of congenital tuberculosis, infection takes place in two ways. That most often described is where a placental tubercle is formed and the infection spreads from the placenta, via the umbilical vein, to the foetal liver, which becomes the site of primary lodgement in the body of the foetus. Intra-partum infection by this route is also described, and is due to the tearing of a tubercle during the separation of the placenta, with release of the bacilli into the umbilical vein. The other route of congenital tuberculosis is by inhalation or ingestion of an infected amniotic fluid, with primary lodgement in the lung or digestive tract.

At one time the congenital origin of human tuberculosis was much over-rated (Baumgarten). Later on Calmette and his associates advanced the hypothesis that the "filterable virus" may pass through the placenta to the foetus and infect it, the infection remaining latent for years. Recently Loewenstein tried to support the theory of the importance of congenital infection by the proof of the tubercle bacilli in the blood of the umbilical vein in many cases even of non-manifest tuberculosis. These are hypotheses rather than facts and open to criticism. Nevertheless a certain number of cases in the literature are beyond doubt established as congenital cases. Out of one hundred cases reported in the literature, Beitzke (1935) passed sixty-one as true congenital tuberculosis, showing lesions in the organs.

Amongst the anatomical questions that arise, that of a double or multiple infection superimposed after birth, as well as that acquired *in utero*, is of

special interest. In these cases there arise several problems: whether foci with the features of a Ghon focus appear in congenital tuberculosis; whether such foci must be regarded as the sequela of exogenous reinfection, or whether they are apt to cast doubt on the congenital origin of the case, or whether they can be attributed to a hæmatogenous outspread. For the elucidation of all these problems such cases as that described in this paper are useful records. Pagel has described these questions, reviewing the literature, in his "Lungentuberkulose" in the *Handbook of the Pathological Anatomy and Histology* edited by Henke and Lubarsch, vol. iii., 2, p. 355 ff., and he comes to the conclusion that in true cases of congenital tuberculosis pulmonary foci are usually met with, but that they are not of great importance and do not exhibit the typical features of the "primary complex."

A case which died aged 49 days will now be described.

Case History.—Male child, aged 38 days, was admitted to hospital from the outskirts of the city; temperature 101° , weight 4 lb. 4 oz. During the ensuing week the temperature ranged between the limits of 97° and 99° , and the infant gained 8 oz. in weight. No enlargement of the liver or spleen was observed, and no cyanosis or dyspnœa. On the seventh day the temperature rose to 102° , still without physical signs, and remained at 100° during the next three days, whilst the weight increased by 3 oz. On the eleventh day he collapsed with temperature 97° and died, aged 49 days. A radiogram of the chest taken post mortem showed no primary tuberculous focus in the lung fields and no enlarged mediastinal glands; some loss of translucency in both upper lobes suggested broncho-pneumonia.

Maternal History.—The mother was first treated for pulmonary tuberculosis in 1934. She had given birth to ten children; four of these had died (causes given: debility, convulsions and measles); there had been three miscarriages. She was confined on July 27, 1936, at home. She did not breast-feed the baby or handle him much herself, but he remained in the four-roomed house with her for five weeks. At the time of the child's death she was able to come into the hospital, but has since gone into a sanatorium and is dying. Gynæcological examination by Dr. N. M. Falkiner in January, 1937, showed no pelvic tuberculosis. The father has a negative sputum and shows no evidence of tuberculosis.

Autopsy.—The lungs presented an appearance of broncho-pneumonia. Only one hilar gland was palpable. A smear taken from the pneumonic portion before hardening showed tubercle bacilli. On opening the abdomen the liver and spleen were seen to be studded with miliary tubercles. A great mass of glands lay around the portal vessels, and on further examination it was found that one of these hepatic glands was particularly big, standing out very obviously. Smear from this gland showed tubercle

bacilli. There were also enlarged glands on the superior surface of the liver, lying in contact with the under surface of the diaphragm. The stomach and intestinal tract were free from infection. The mesenteric lacteals were engorged, but on section were found to be non-tuberculous. No ascites was present and there were no tuberculous glands found in the lower abdomen. The lymph glands of the spleen were affected, but were very small as compared with the large hepatic gland. My thanks are due to Dr. M. Farrington, pathologist to St. Ultan's Hospital, for the above examinations and for the sections.

Report from Dr. Walter Pagel, Papworth Village Settlement

Macroscopic Examination.—Liver and Spleen.—Disseminated small foci and also some that are larger and more solitary. The portal lymph gland is considerably enlarged, reaching the size of a small plum, caseous and partially liquefied (Fig. 1). At the hilum of the spleen some small caseous glands, the size of a small wheat seed (Fig. 2).

Lungs.—Dissemination in both lungs, hæmatogenous in character. Also a few solitary caseous foci, situated sub-pleurally, and sharply defined; one in the right sub-apical region, and one or two others in the lingual region of the left upper lobe (Figs. 4 and 5). The lymphatic bifurcation gland contained a small caseous focus the size of a small peppercorn, half the size of the gland.

Heart.—The foramen ovale was patent.

Histological examination showed a large number of tuberculous foci with central caseation and innumerable tubercle bacilli in the liver, lungs and spleen. Besides the miliary foci there were some large conglomerate tubercles with massive caseation. In the liver these conglomerate tubercles showed a number of vessels with caseation of the wall and the lumen (Fig. 3), so as to suggest an endophlebitic development of the coarser hepatic lesions; these were definitely encapsulated by a fairly thick layer of fibrotic tissue, the surrounding liver parenchyma being also fibrotic and interspaced with lymphocytes, plasma cells, and eosinophilic cells. In the miliary tubercles of the liver there was less caseation than in those of the spleen and lungs. The coarser foci in the latter organs were partially surrounded by thin layers of connective tissue, but the thickness of the capsule was definitely less than in the larger foci of the liver.

DISCUSSION.

In support of a diagnosis of true congenital tuberculosis in this case several points emerge. The mother was suffering from a severe pulmonary tuberculosis, and although an infected infant has been found in cases of

PLATE XI



FIG. 1.—LIVER WITH MILIARY OUTSPREAD AND ONE LARGER FOCUS WITH CENTRAL PHLEBITIS (HISTOLOGICALLY) (arrow). LARGE CASEOUS PERIPORTAL GLAND (arrow).

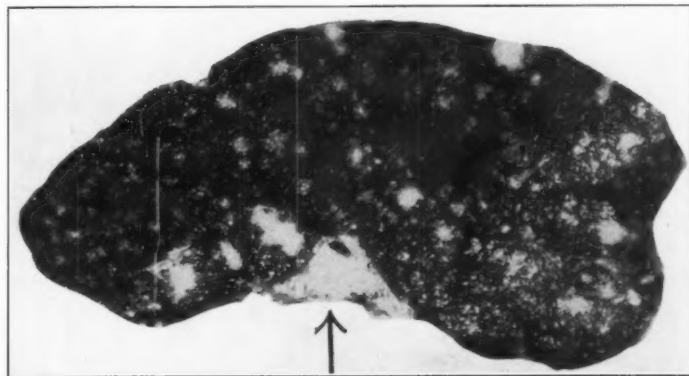


FIG. 2.—SPLEEN, MILIARY AND SUPRA-MILIARY OUTSPREAD. CASEOUS GLAND AT HILUM (arrow).

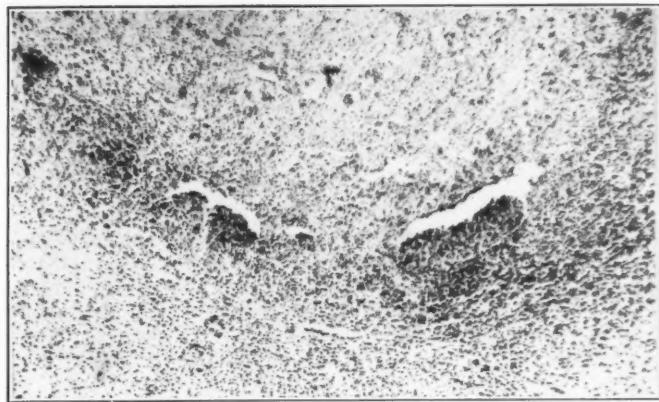


FIG. 3.—LIVER, LARGE FOCUS SHOWING CASEOUS PHLEBITIS (ENDANGITIS).

[To face page 266.

PLATE XII

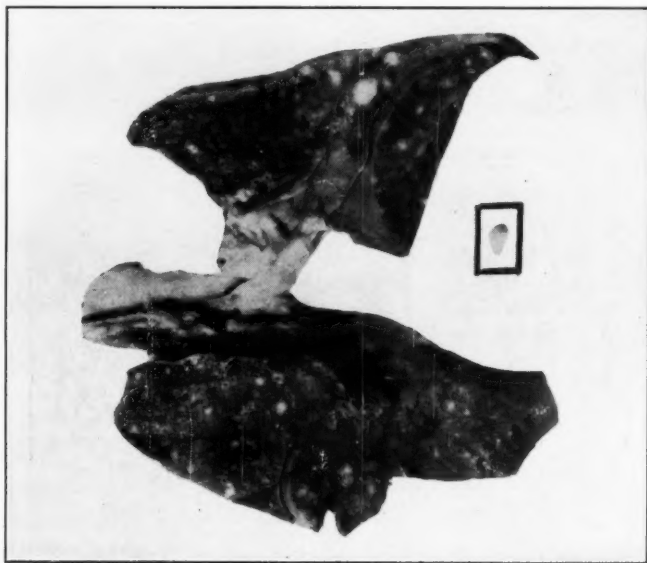


FIG. 4.—SURVEY OF THE LUNGS. MILLIARY AND SOME COARSER NODULES. *In the square below*: LYMPHATIC GLAND OF BIFURCATION, LEFT PART CASEOUS.

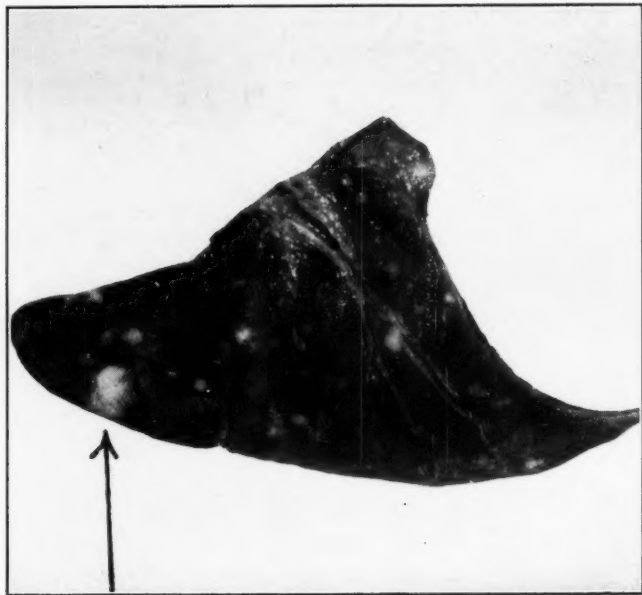


FIG. 5.—RIGHT UPPER LOBE WITH ONE COARSER FOCUS SUBPLEURALLY IN THE SUBAPICAL PARTS RESEMBLING A PRIMARY FOCUS (*arrow*). PSEUDO-GHON-FOCUS.

(To face page 27.)

light infection, yet a tuberculous bacillæmia is more likely to occur with a heavy infection of the lungs. As an early infection of the fœtus leads to abortion, in this case we may presume that the infection of the fœtus occurred in the later months of pregnancy. The majority of the maternal blood supply to the fœtus passes through the fœtal liver; thus there could have been produced during intra-uterine life the widely disseminated tuberculosis of the liver which was found in the case in question. The lymphatic drainage of the liver is superiorly to the glands lying on the under surface of the diaphragm, and inferiorly to the hepatic glands lying around the porta hepatica. Both these groups of glands were affected in our case, *but the size of the hepatic gland exceeded by far all the other caseous glands (especially the bifurcation gland)*, thus placing the site of primary implantation in the portion of the liver to which the maternal blood first gains access. And we know that primary entry to the liver must take place *in utero*.

The lung lesion presents a more complicated problem. In the fœtus a flow of blood through the pulmonary circulation is largely cut out by the patency of the foramen ovale; but at the same time the minute stream which nourishes the atelectatic lungs flows so slowly that it would favour the lodgement of the tubercle bacillus and at the first respiration after birth a miliary infection commences. In discussing the lungs in the present case, the hæmatogenous origin of a pulmonary focus which by its anatomical appearance could have been regarded as an exogenous Ghon focus has to be assumed. The focus shown in Fig. 4 is most probably blood-borne, since we find several of its kind in all parts of the lungs, as well as all intermediary stages between the larger foci and typical miliary disseminations. Finally we would expect a much larger caseous gland at the lung hilum, if this large focus be indeed a true Ghon focus. But if we knew nothing about the case and about the extra-pulmonary organs and would have to form an opinion as to the pathogenesis of the pulmonary condition alone, we would probably regard the lesion mentioned as recent primary-exogenous-focus with commencing corresponding lesion in the regional lymphatic gland. This is theoretically very important, since in this case it is justifiable to assume that the larger solitary foci of the lung are hæmatogenous in origin, although they present features which we are accustomed to see in Ghon foci of exogenous origin. There is no reason to suppose a double infection in this instance: one true congenital via the umbilical vein and liver (endogenous) and a second exogenous one with formation of Ghon focus and caseous bifurcation gland, the latter either from outside or from the amniotic fluid. For the lung condition is in principle identical with that of the blood-borne condition of the liver and spleen—namely, miliary outspread with all the intermediate stages to coarser foci. Furthermore, a larger caseous

pulmonary gland would be expected if this were an exogenous primary infection; yet the bifurcation gland was smaller even than the splenic gland. These are only anatomical arguments, and when a child has been exposed to contact with its tuberculous mother for thirty-eight days after birth the possibility of an exogenous *superinfection* cannot be entirely excluded; one has also to consider the possibility of an exogenous infection of the lung by aspiration of amniotic fluid. Apparently the organism was overcrowded with bacilli and formed "primary" lesions both in liver and lungs—that is to say, lesions developed in an ante-allergic stage and therefore the regional glands were involved. The possibility that the pulmonary and splenic glands were attacked by hæmato-lymphogenous metastases, independent of the foci in the organs, is negated by the absence of caseous lymph glands in the posterior mediastinum. Lindquist and Lauren (*Act. Path. et Microb. Scand.*, 1933, Supp. XVI., p. 231) describe a case aged 39 days which closely resembles our case, but theirs showed greater involvement of the hilar glands of the lungs; they concluded that the pathological picture of the liver with lung involvement was due to massive outpouring of bacilli into the foetal circulation through a lesion of the placental tuberculous focus during parturition.

SUMMARY.

1. An infant aged 49 days died of a tuberculous infection involving the liver, spleen and lungs.
2. The congenital origin is proved by the size of the portal gland which exceeded by far any other gland.
3. Pulmonary foci were present which could have been mistaken for exogenous lesions; but they were recognised as blood-borne by—
 - (a) the transitional stages between miliary disseminations and the large foci in all organs;
 - (b) the condition of the regional lymph gland.
4. This case shows that not only miliary but also large-solitary-caseous foci can be hæmic in origin.

I should like to express to Dr. Walter Pagel my warm thanks for his examination of the specimens, for his reports, and for the photographs, and also for placing at my disposal the benefit of his experience on this remote subject.

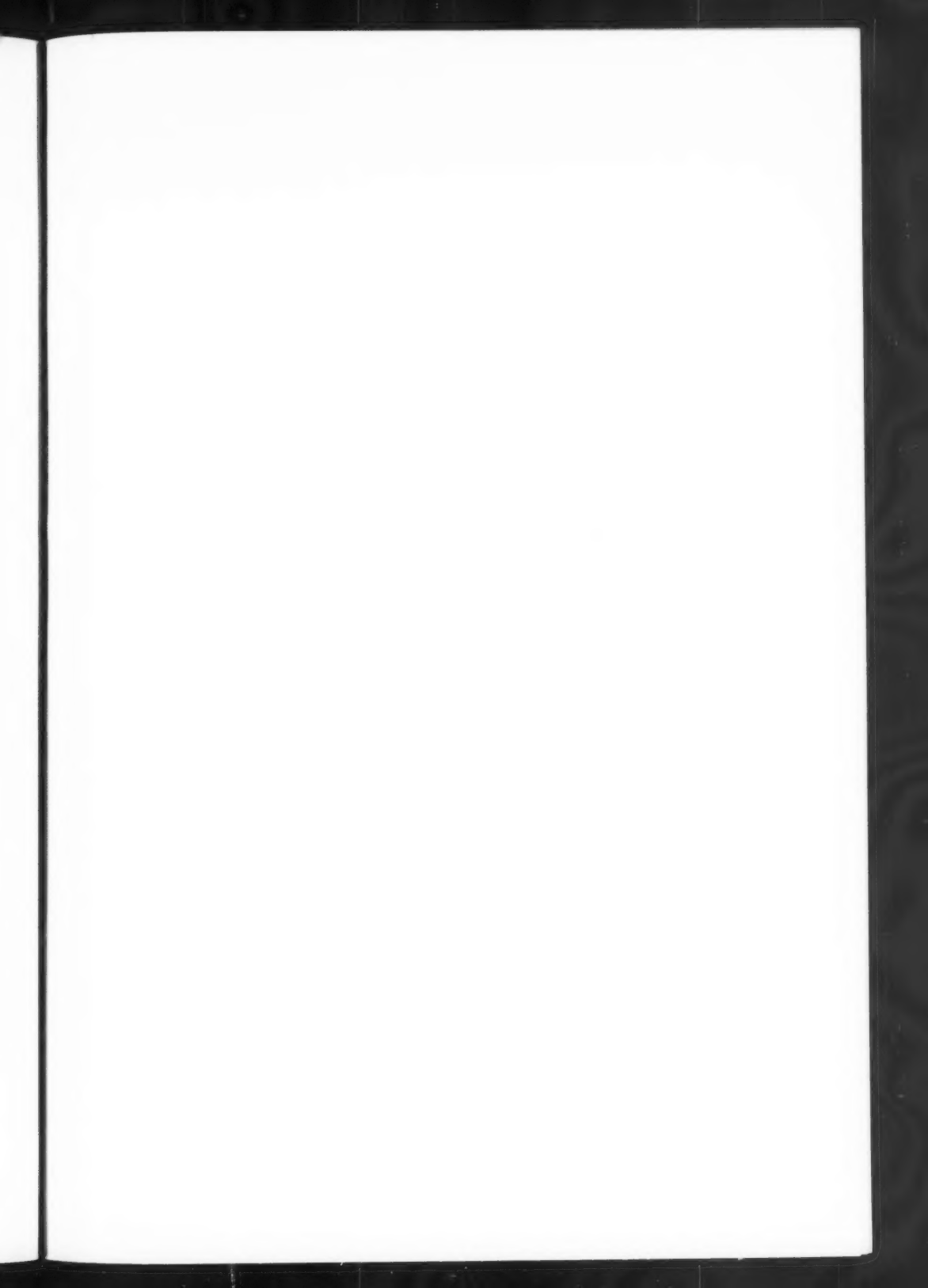


PLATE XIII
CAVITY IN AN INFANT EIGHT WEEKS OLD



FIG. 6.—LUNG FOCUS, CAVITY SURROUNDED BY CASEOUS MASS ($\times 24$).
Hematoxylin and eosin.

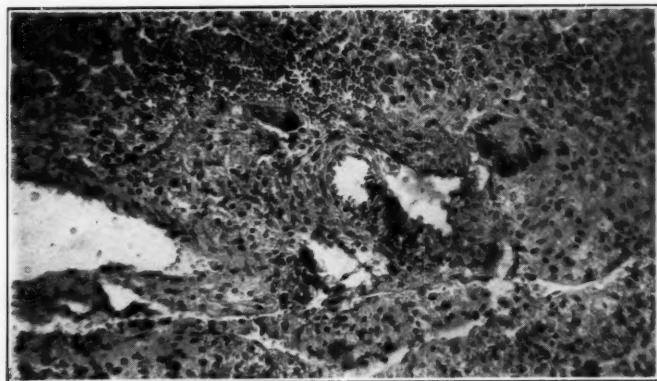


FIG. 7.—LUNG FOCUS, TUBERCLE SHOWING ENDOTHELIOID AND GIANT CELLS ($\times 160$).
Hematoxylin and eosin.

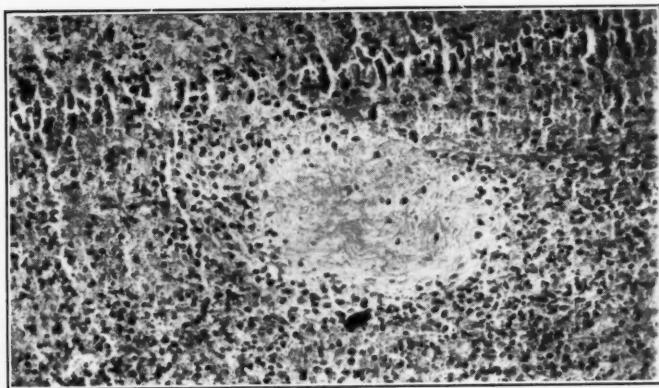


FIG. 8.—GLAND, SHOWING CASEATION ($\times 100$).
Hematoxylin and eosin.

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CAVITY IN AN INFANT OF EIGHT WEEKS

In contradistinction to the rare case of congenital tuberculosis above described, another case may be reported which presents the usual form of exogenous infection in infants, but with unusual termination. Here we have a typical primary complex in the lung, cavity formation in the primary focus, no other foci in the body, and death at eight weeks. Few such cases with single foci in the lungs under the age of 3 months are reported in the literature. Owing to the extremely active response of the mediastinal glands, which in infants offer little or no resistance to the primary infection of the tubercle bacillus, the usual picture of the infant's lung is one of tremendous glandular activity with widespread dissemination in lungs, spleen and other organs; the primary focus in the lung may be hard to discern, or it may be observed surrounded by a localised caseous pneumonia.

A male infant aged 8 weeks was admitted to hospital in May, 1934, labelled "marasmus." He died in three hours. The father, aged 75, was healthy, and the mother, aged 24, had pulmonary tuberculosis. The infant was born in a maternity hospital and was nursed by his mother for two weeks. She was then removed to a sanatorium, while the infant was sent to a small orphanage. The other children in this home were all healthy and there was no case of lung tuberculosis amongst the staff.

Post-mortem examination revealed a patch of broncho-pneumonia at the base of the right lower lobe, near the periphery; the corresponding inferior tracheo-bronchial gland on the same side was greatly enlarged; there were no pleural adhesions and no evidence of tuberculosis in any other part of the lungs. The neck, thorax and abdomen were thoroughly searched for signs of tuberculosis with a negative result. Dr. Farrington supplied the following details: There was found in the right lower lobe a caseous mass somewhat round in form and situated 6 mm. from the pleural surface; in the centre of this mass was a cavity which measured less than 4 mm. in all diameters; smears from this focus were found to be swarming with tubercle bacilli. On sectioning the lung towards the hilum, the lymph node in the line of drainage was found to be infected, enlarged and caseous. Microscopically the infected portion of the lung showed a caseous mass with central cavitation (Fig. 6). The portion of the lung tissue immediately surrounding the caseous area showed typical tubercles, composed of endothelioid cells, with some giant cells (Fig. 7). In these nodules the elastic tissue of the lungs had completely disappeared. Some of the tubercles showed the beginning of caseation. Microscopically the gland at the hilum showed the formation of tubercles and caseation (Fig. 8), and the normal glandular

substance was almost completely destroyed. On comparing the sections of primary focus and gland, it may be observed that there is a slightly more advanced degree of degeneration in the primary focus. From these appearances one is justified in assuming that the first focus was that in the periphery of the lung, and that the gland condition was secondary.

From the evidence presented it would appear that the infection had occurred by inhalation during the first two weeks of life. The case presents no features which would support a theory of congenital infection. It does, however, demonstrate the fact of the poor resistance of the young infant to the tubercle bacillus; here an initial dose of infection, the exposure to which occurred only in the first two weeks of life, was sufficient to produce a fatal result in six or seven weeks' time. The small perifocal inflammation failed to resorb and went rapidly on to caseation, while the Ghon focus broke down, forming a cavity. The infant died of toxæmia before other mediastinal glands became involved, and thus before a bacillæmia produced metastases in other parts of the lung or in the spleen.

SOME USES OF BRONCHOSCOPY IN CHEST CONDITIONS

By W. G. SCOTT-BROWN,

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A SHORT description of the apparatus used in a Bronchoscopic Clinic is necessary to indicate recent improvements in the instruments.

The most unusual instrument is a Jackson's aspirating bronchoscope. This is a 40 cm. tube of 7 mm. diameter with distal illumination and a narrow tube for attachment to a suction apparatus incorporated in its wall. The small electric bulbs have fused "lenses" to throw the light as far forward as possible.

The aspirating bronchoscope is first passed and a general examination is made, suction being carried out through the side tube set in the wall of the bronchoscope. For any detailed examination the distal electric bulb on its long metal lead is withdrawn and in its place is passed a unit consisting of a telescope looking directly forward with its own distal illumination, suction tube, also a fine tube down which can be passed forceps, cautery points, etc.

With this apparatus a most thorough examination may be made, though with it the right upper lobe bronchus cannot be seen. This is done with the retrograde telescope, which is constructed on the same principle as the cystoscope. A light is incorporated in the end of the tube, and by a system of prisms and a small window in the side of the telescope close to the terminal light a retrograde view at 45° is obtained. By this means a good view of the upper lobe bronchus can be obtained up to its primary bifurcation.

For a rapid macroscopic inspection of the bronchial tree proximal illumination as used in the Hazlinger set gives the best view. As soon as the cords are passed a view is obtained to the bifurcation and down into the right bronchus. This is possible by the parallel beam of light thrown by a powerful bulb.

These advantages, however, are outweighed in a careful search of the bronchi, as the magnifying telescopes passed down the bronchoscope into the bronchi give a more detailed picture.

Bronchoscopy is usually carried out under local anæsthesia, though pre-medication with, for example, avertin is of use in certain cases.

Bronchoscopy is used in both the diagnosis and treatment of a number of conditions.

Neoplasms.

Benign growths are not common, though a very great variety of tumours are reported in the literature; papillomata, fibromata, or granulomata are among the commonest innocent growths.

At quite an early stage they give rise to cough, often slight or severe hæmoptysis, and perhaps slight rises of temperature. There may be no physical or radiological signs in the early stages, though later signs of bronchial obstruction will develop.

Provided the neoplasm is endobronchial, as are the majority, they are easily identified, though it is usually not possible to differentiate at the time of the bronchoscopy the difference between a granuloma and an innocent tumour.

The treatment in any case calls for removal with cupped forceps, and this is usually easy to carry out completely and with little bleeding. There are certain tumours such as an angioma that are better treated by diathermy.

If the case is not seen until obstructive symptoms and signs are present, it will generally be found at bronchoscopy that there is some degree of suppuration present. Particularly in the case of papillomata, as these tend to recur with such frequency, it is wise to follow up bronchoscopic removal by bronchoscopic aspiration as a means of preventing recurrence.

The commonest *malignant neoplasm* found in the bronchus and lung is the bronchial carcinoma.

Granted that the careful clinical examination of the patient is the most important investigation in any disease of the lungs, then bronchoscopy is as important as any other method of examination in a suspected case of malignancy or one in which the diagnosis remains obscure after the clinical examination.

The clinical signs of bronchial obstruction or of infiltration of the lung may be sufficient to make a diagnosis reasonably certain. Further evidence may be obtained from the sputum, though the pathologist's report is seldom sufficiently definite in the finding of malignant cells. Radiological examination may give definite evidence in favour of a neoplasm. All these examinations become more convincing the more advanced the disease. Not so with bronchoscopic examination, when the earliest sign of infiltration ulceration or nodular formation is easily seen in the perfectly symmetrical and regularly branching bronchus. Every patient with an unexplained cough or expectoration or hæmoptysis should be bronchoscoped, especially if these symptoms are associated with dyspnoea. Most parts of the bronchial tree can now be examined, and it is only by direct examination that a greater number of cases will be diagnosed in the early and more easily treated stages of the disease.

It is always safe to take a specimen for microscopic examination in the case of an endobronchial carcinoma, though it is doubtful if it is wise to take a section from a suspicious area with normal mucosa over it. It may be that there is a more deeply situated carcinoma, but it is essential to exclude the presence of aneurysm or pulmonary tuberculosis.

Bronchoscopic examination may show merely a change in colour. The mucous membrane may be whiter or redder than normal, and it may show enlarged and injected vessels at this point. Other changes may be in the shape of the thin white dividing spurs, or changes in the normal circular or oval bronchial openings. Projections of nodular fungating or ulcerating tumours into the normally patent lumen are very easily seen.

As in the diagnosis of all neoplasms, the bronchoscopic diagnosis of malignancy lies largely in the infiltration of the tissues in the neighbourhood. This infiltration is easily recognised by gentle pressure on the wall of the bronchus with the instrument. Even with, or, more correctly, particularly with, deeper or peribronchial neoplasms this woody infiltration can be made out.

Treatment of early cases has been successful with local bronchoscopic removal, though the area should be irradiated afterwards. As always, early diagnosis is the secret of successful treatment of carcinoma of the lung, as of

carcinoma elsewhere. Any patient of fifty who has had a persistent cough in spite of treatment, especially if the sputum in the first place was blood-stained, should be suspected.

If the growth cannot be removed bronchoscopically, it may be treated with radium, or better with radon in a container, or by the implantation of radon seeds. This last method has given results that suggest it should be tried more extensively.

If the growth is more peripheral or cannot be seen bronchoscopically, the thoracic surgeon will explore the lung and insert radon seeds from without. Now that the mortality of lobectomy is so much less, this method gives good hope of completely extirpating the disease if it is limited to one lobe. It is very difficult to select suitable cases.

Suppurative Conditions.

An acute lung abscess should in almost all cases be treated by bronchoscopic aspiration.

Those caused by foreign bodies clear up quickly after the removal of the foreign body. Those following other suppurative processes or the post-operative type not due to foreign bodies are treated by bronchoscopic aspiration.

The pus is usually thick and viscid, and even if the abscess cavity is not actually explored and aspirated the dilatation of the bronchi and the removal of the viscid sputum usually produce rapid improvement in the general and local condition.

Two to four aspirations are usually sufficient to produce healing. Lavage is inadvisable in the acute cases.

In chronic abscesses, the result of bronchoscopic treatment is not so rapidly successful; many more treatments are usually necessary to produce healing. The treatment consists of aspiration, lavage, dilatation of the bronchi or of strictures if they are associated with the condition. The use of antiseptic solutions, or novarsenobillon when spirochætal infection is present, is sometimes useful, though it is doubtful if better results are obtained than with simple saline or alkaline solutions.

The instillation of lipiodol into the cavity is of value in defining the exact size and position of the cavity. It is more accurate than other methods of introducing the radio-opaque, as it can be done without masking the abscess by general spread of the lipiodol. In cases which cannot be cured by bronchoscopic methods, then the exact localisation is of great importance to the surgeon.

Bronchiectasis.

Bronchiectasis is an important condition in which bronchoscopy is of use in diagnosis and treatment. The diagnosis is made clinically, and the extent and type of the dilatations are ascertained by lipiodol X-ray examinations. Bronchoscopy is of use in eliminating the presence of a foreign body, and particularly non-opaque foreign bodies, or defining the presence of a stricture or neoplasm as a cause of the condition.

Bronchoscopic treatment does not cure bronchiectasis, and from its pathology it would not be expected to do so; but the comfort of the patient and improvement in the general condition, also the diminution of the sputum and cough, is often gratifying. It is frequently possible to get patients back to their ordinary employment.

Aspiration with lavage is the most efficient method of treatment, and saline seems to be as efficient as antiseptic solutions. A large quantity should be used—say a pint—and as the return becomes clearer the patient is encouraged to inhale more deeply.

Treatment must continue for many weeks at frequent intervals, but gradually this interval is lengthened, and later one treatment every four or six weeks may be all that is necessary to keep the patient fit, though not cured.

Bronchoscopic treatment will always be associated with medical and postural treatment, and in some obstinate and particularly unilobular cases improvement may be started by associating the wash-outs with artificial pneumothorax, which must be kept up for some months while one or two weekly wash-outs are carried out. Later it seems possible to keep the sepsis in check by aspiration lavage only.

In this condition, again, lobectomy is becoming a safer proceeding, but may be associated with a previous course of aspiration to improve the local sepsis before operation.

Pulmonary Tuberculosis.

It is comparatively rarely that bronchoscopy can be of use in uncomplicated cases of pulmonary tuberculosis when the diagnosis is certain. Even in these cases there is one definite indication. In a case with hæmoptysis, where it is of importance to decide from which side or lobe the bleeding comes, bronchoscopy very easily establishes this fact, and it can be done so rapidly and with so little distress to the patient that it is of great value to the physician in some cases.

It is in the doubtful cases of tubercle, or those in which there are obscure and unexplained signs and symptoms, or where a definite diagnosis cannot

be arrived at clinically or radiologically, that bronchoscopy is of particular value.

By this means either innocent or malignant tumours are excluded, tissue or uncontaminated sputum specimens are obtained from individual lungs or lobes, and direct lipiodol injections carried out if bronchiectasis or abscess are possible diagnoses.

Inspection of the bronchial tree in pulmonary tuberculosis shows that the mucous membrane is usually pale. Collections of pus and caseous material may be discovered and aspirated, and may reveal the pale granulations of a peribronchial gland that has eroded the bronchus. Even if the bronchial glands have not ruptured into the bronchus, it is very characteristic to observe considerable broadening of the carina due to the glandular enlargement.

Post-operative pulmonary collapse requires a word. Though most frequently associated with upper abdominal operations, where movements of the diaphragm are interfered with either directly or reflexly, it may sometimes be caused and is frequently aggravated by thick viscid mucus acting as a plug.

The majority of these cases recover without aspiration, but a certain number may progress to a chronic lung abscess or may rarely prove fatal. In selected cases, bronchoscopic aspiration is of the greatest value and produces a dramatic recovery. The removal of the thick sticky mucus which could not be coughed away allows the collapsed alveoli to open up even in cases where the mucous plug has not been the primary factor in the collapse.

Asthma.

The treatment of asthma by bronchoscopy is of doubtful value. It is advocated by some writers, and improvement is said to be obtained by dilatation of the bronchi. It is certain that some attacks may be aborted and severe attacks arrested by aspiration of the thick bubbly mucus that is found in these cases.

It is reported in some cases that such treatment is permanently curative, but from the nature of the disease such local treatment cannot be expected to do more than relieve or cut short an isolated attack, unless the so-called asthma is secondary to a foreign body, neoplasm, or other condition that can be specifically treated through the bronchoscope.

In conclusion it may be said that nowadays any clinic dealing with diseases of the chest must work in conjunction with a Bronchoscopic Clinic. Those physicians who have once had the benefit of such co-operation look upon bronchoscopy as an essential part of their examination in selected cases.

THE USE AND ABUSE OF SURGERY IN THE TREATMENT OF PULMONARY TUBERCULOSIS*

By W. BURTON WOOD,

M.D.(CAMB.), M.R.C.P.(LOND.)

Physician to the City of London Hospital for Diseases of the Heart and Lungs.

WE have heard so much in recent years of the triumphs of thoracic surgery that I feel we are in danger of losing our sense of proportion. Is triumph the right word? Skill and daring have enabled the surgeon—and, I might add, the anæsthetist—to overcome the almost insuperable difficulty of operating on the most vital organs with some measure of success. I yield to none in my admiration of their work, but if a triumph has been secured it is of a Pyrrhic order. We have no right to ignore the added suffering and—I had almost said—the appalling mortality that has attended the advent of thoracic surgery.

Can we fail to be uneasy when we hear that in America a thoracic surgeon who truthfully reports his disasters has been referred to with contempt as a “crêpe hanger”? A prominent American physician recently visiting this country remarked that he had come to Europe to find out why his thoracoplasty cases died. “I have been to Berlin,” he said, “and they can’t tell me there; and I have come to London, and you can’t tell me here.”

Not long ago one of the most distinguished living chest physicians observed that if he were to publish the results of chest surgery he had seen in recent years it would put back the cause of chest surgery for a generation.

At the last meeting of the Tuberculosis Association in London a surgeon referred to the many thousands of lives saved by thoracoplasty. A voice whispered in my ear, “I haven’t seen one of them.” Many a true word is spoken in exaggeration.

May I quote a few lines from a letter received the other day from a patient in whom I induced a pneumothorax last year before sending him to one of the best sanatoria in this country?

“Since July last, commencing with fluid and a blood effusion after

* The substance of an address given at Manchester at a meeting of the North-Western Tuberculosis Society on January 28, 1937.

adhesions (*i.e.*, section of adhesions), I've developed every known complication and some practically unknown ones.

"The net result has been the expansion of nearly the whole of the lung, and an effort to keep the infected part down with oil was only partially successful. The doctors here are now discoursing upon the charms of a Thorax Caplacity (*sic*). . . . I'm not a bit enthusiastic . . . it is rather heartbreaking to have to write in this vein."

That is the patient's side of the picture.

Few conditions are more frightful than those which may follow major operations on the chest. If tragedy follows surgical interference it is not fair to blame the surgeon. The surgeon is called in because the physician has failed, and medical responsibility is the greater because it is seldom possible to be sure that the operation recommended was really necessary. Who can forecast with any confidence the future of any patient afflicted with fibroid phthisis? Have we not all seen the possessor of chronic cavity, secure in a pension, live happy ever after?

When a patient is suffering from acute phthisis and within a few days of lung deflation the fever falls to normal; when copious sputum swarming with tubercle bacilli is reduced to a trace of sterile saliva, extreme malaise giving place to euphoria and despair to hope, we can with reason attribute the improvement to treatment. But we cannot feel an equal confidence about the result of a thoracoplasty the main object of which is to protect the patient from the risk of re-activation of disease which had become quiescent before operation was attempted. Let us beware of emulating the cock who attributed the sunrise to his crowing.

I feel that when an operation is proposed the physician should be, in court-martial phrase, the prisoner's friend—the devil's advocate if you will. He should, in the patient's interest, consider every objection to a sentence which may prove capital. I am moved to this protest because I do not like to hear physicians urging extreme measures with the unbalanced zeal of the official prosecutor at a political trial. I am not advocating an obstructive conservatism in this matter, but I do claim that our attitude should be one of caution and restraint.

Operations on the Phrenic Nerve.

The operation of phrenic avulsion is a clumsy business and it is surprising that the blind tearing away of the roots of an important nerve by traction near its origin does not result in more accidents. It is, however, wrong to describe it as devoid of danger—sudden death, rupture of the thoracic duct, effusion leading to empyema and perforation of the œsophagus, spontaneous pneumothorax, injury to the cervical sympathetic chain or brachial plexus

—all these have occurred. Phrenic avulsion has been practised too frequently in the past, but at the present time the pendulum has perhaps swung too far in the opposite direction. The operation should not be dismissed as valueless, for rightly employed it may be very helpful in the closure of cavities in the lower zones of the lung, and especially in artificial pneumothorax for the relaxation of tense adhesions which are holding out the wall of a cavity. It is thus an alternative to internal pneumolysis when this may be impossible either on account of the nature of the adhesions or because facilities for section are lacking.

My own experience includes a series of forty cases in which phrenic avulsion was performed as a supplementary measure in artificial pneumothorax to close cavities. A successful result—*i.e.*, apparent closure of the cavity—was secured in about fifty per cent. This does not of course imply that half of those subjected to operation were cured of tuberculosis.

The disadvantages of phrenic avulsion in support of artificial pneumothorax are (*a*) that a less effective collapse of the lung is obtained than when adhesions are divided; (*b*) that a healthy lower lobe may be permanently put out of action, and (*c*) that relaxation can be obtained only if the lung is anchored by adhesions at apex and base.

Internal Pneumolysis.

There is no need nowadays to emphasize the value of this proceeding in rendering an ineffective collapse effective, for an ineffective collapse is not only useless, it is worse than useless. It should either be made effective or abandoned. In a large proportion of pneumothorax deflations effective collapse can only be secured by the method of Jacobæus.

Endoscopic work demands a natural aptitude for fine work, a considerable degree of skill, and skill can only be attained by experience. The method is therefore unsuitable for small institutions, and it should not be undertaken by a physician unless his clinic provides sufficient material—*e.g.*, at least three or four endoscopies a month.

External Pneumolysis by Plombage.

If a satisfactory operation to secure pulmonary retraction without the shock and mutilation of thoracoplasty could be devised it would be preferred in all cases in which only a local effect is required. Unfortunately, if an anterior approach is employed and a tampon of wax is inserted through one of the upper intercostal spaces after pleural stripping, though the immediate result may be good the wound usually breaks down later and the piecemeal extrusion of the wax which follows leaves a cave lined by

suppurating granulation tissue. An extra-pleural cavity replaces the intra-pleural vomica. If a posterior approach is adopted the technical difficulties are greater and, should the operation fail, the scarring which results may make any further treatment by rib resection impossible.

In this country at any rate apicolysis and plombage may be said to have been tried and found wanting.

Thoracoplasty.

This operation should not be regarded as the crowning triumph of progressive therapy in the treatment of pulmonary tuberculosis. At best it is a cruel necessity—to borrow Oliver Cromwell's excuse for judicial murder. The medical historian a few hundred years hence will, I fear, read of our bungling efforts with amazement, and our operations may well seem almost as crude to him as the use of the branding iron by our ancestors does to us.

How difficult it is to eradicate disease from a system of communicating tubes even when complete excision of the diseased area is possible, is shown by the relapses which occur after lobectomy for bronchiectasis. It may not be quite true to say that thoracoplasty is only suitable for stabilised, localised and quiescent disease, because, as we all have found in artificial pneumothorax work, arrest of disease in the chief centre of infection is sometimes followed by retrogression in secondary foci elsewhere. Broadly speaking, however, the indication for thoracoplasty is stabilised fibrotic disease with cavitation not controllable by pneumothorax, or internal pneumolysis. And the time to operate is one of the periods when the disease is temporarily arrested—in one of those quiet intervals which punctuate the long course of chronic phthisis. We must strike while the iron is cold.

We are not warranted in saying that thousands of lives have been saved by thoracoplasty. Such a statement implies that the death rate from tuberculosis has been significantly altered by surgical procedures. Statistical evidence does not indicate that the mortality rate from phthisis has been sensibly reduced by the general adoption of artificial pneumothorax, though no one who practises collapse therapy can question its supreme value in the treatment of certain types of disease. Yet the collapse secured by a successful artificial pneumothorax is more complete than can usually be secured by rib resection. Thoracoplasty should thus not be regarded as one of the standard methods of treatment for pulmonary tuberculosis, but as a special measure applicable to those comparatively rare cases in which spontaneous healing is prevented by mechanical obstacles to the contraction of fibrous tissue which, by further contraction, would obliterate spaces in the lung parenchyma which still harbour tubercle bacilli and the ducts by which

these may still be dissipated to hitherto unaffected areas. Thoracoplasty may thus prevent the spread of disease by direct transmission of bacilli through patent air ways.

No form of collapse therapy will prevent hæmatogenous dissemination, but if this occurs in the course of pneumothorax treatment the collapse of one lung can at any stage be abandoned or exchanged for collapse of the opposite lung or be combined with it. The results of artificial pneumothorax are not irrevocable. The results of thoracoplasty are beyond recall.

If we are to avoid doing more harm than good we shall have to restrict ourselves in our choice of cases, and I would suggest the following principles:

1. The patient's mentality should be considered. Above all things no patient should be persuaded to have the operation, nor should a patient be regarded as a coward if he evinces the dislike of cold steel traditionally attributed to our enemies in war.

2. No strict age limits are applicable, but in general the patient should not be under twenty-five nor over forty-five years of age.

3. The patient should not be liable to bronchitis nor subject to emphysema.

4. The disease should not be progressive at the time of operation.

5. The disease should be unilateral. Here again some exceptions may be made to cover cases in which scarring may be present in the contralateral lung or in which the disease is limited to a small fibrous-walled cavity on each side.

6. The disease should be fibrotic in type and show a tendency to contraction.

7. The patient's general condition should be satisfactory. The blood picture, including the reading of the sedimentation rate, must be considered when estimating prognosis.

8. The risk to be anticipated from a conservative policy should be definitely greater than the estimated risk of operation.

The experience of the prudent physician must be limited, but the satisfactory results obtained when the surgeon is asked not to perform a miracle but to rectify a mechanical defect can be proved by experience, and the physician owes a debt to the surgeon whose skill enables him to pluck even an occasional brand from the burning. The results obtained in a small series of cases will best illustrate my own experience.

This series comprises twenty-four cases, including three in which operation was performed for septic conditions, two of which were not associated with tuberculosis.

The youngest patient was nineteen years of age and the oldest fifty-five years, the average age being twenty-eight years.

As all the operations have been performed within the last ten years their ultimate effect cannot yet be estimated. We must therefore base our judgment on the benefits obtained by noting the effect of the operation on the lesion—*i.e.*, whether cavity closure has been secured by relaxation of the tension of fibrous tissue with resulting contraction. If this result has been secured, we can claim that a prospect of permanent invalidity and probable decline has been replaced by a reasonable expectation of permanent cure.

The results of operation can be divided into three groups:

1. Satisfactory, 15 cases; the immediate object as outlined above has been secured and the prognosis is hopeful.

2. Doubtful, 2 cases.

3. Failure, 3 cases; cavitation persisted after operation, the patient's condition deteriorated or death resulted.

It would be unwise to draw any final conclusions as to the value of a thoracoplasty from so small a series of examples, and ridiculous to estimate percentages. My own experience, however, does suggest that if thoracoplasty is performed under specified conditions on properly selected cases operative mortality is low, post-operative suffering is seldom severe and permanent arrest of disease apparently otherwise incurable is obtained.

But we should never forget that the risk of over-treating is greater than the risk of under-treating a disease in which the prognosis is, after all, often better than we expect it to be.

Acknowledgement is due to Mr. W. H. C. Romanis and Mr. T. Holmes Sellors, who performed most of the thoracoplastic operations referred to, and to whose co-operation and skill I am much indebted.

COMMON SAYINGS OFTEN HEARD IN CONNECTION WITH PULMONARY TUBERCULOSIS

By BERNARD HUDSON,
M.D., M.R.C.P.

Swiss Federal Diploma, Davos, Switzerland.

In the course of several years I have heard so frequently the following sayings from the lips of patients that I have thought it worth while to put them on paper, and point out how misleading many of them are. There is probably no disease around which so many of these sayings have accumulated. In fact, they are repeated over and over again, with such

unchangeable monotony that one might almost call them "false proverbs." This can be well understood when one considers the frequency of this disease, its prolonged course, its tendency to relapse, and its various effects on the psychology of the patient. The writer has lived for many years, both as a patient and as a physician, in the Alpine resorts of Switzerland, and naturally many of the remarks here presented bear upon the suitability or otherwise of such Alpine resorts for cases of pulmonary tuberculosis.

"*The blood comes from the back of the throat.*" I could not say how many times patients have mentioned to me that they have been told this, after an attack of hæmoptysis. As an early symptom of tuberculosis, this is a most valuable warning sign. It should bring to light the nature of the trouble from which the patient is suffering. By far the most common cause of blood spitting is pulmonary tuberculosis, and however slight it may be, this disease should always be considered the cause—unless it can be proved to be something else.

"*You should be cured in the place where you will have to live.*" This is very common advice to patients suffering from tuberculosis, and is often used as a deterrent to their coming to Switzerland. It is very hard to understand a sensible person making such a statement. Surely the patient should be placed in those circumstances where healing can best take place. By healing is meant the formation of fibrous tissue, and the shutting off of the diseased areas of the lung, by the contraction and cicatrisation thus obtained. It is difficult to fathom why a lung cicatrised in one part of the world should be likely to break down when the patient returns to another. It is probable that some of the "temporary cures" who return to England from Switzerland are responsible for this saying. Frequently, patients who come to Switzerland make very rapid apparent recovery. The cough and sputum disappear, the weight goes up, and the tired, languid feelings are replaced by those of well-being and fitness. It is difficult for such people to realise that their cure is not completed, and they often return to England after a few months, to begin work, only to break down again, as they are not yet sufficiently stable in health for normal life. A year or two, instead of a month or two, might have made permanent cures of them. I would even go further and say that patients are unlikely to be cured where they live. For instance, people in poor circumstances as regards food and housing respond at once to better conditions. Those who live by the sea often do well in the mountains, and vice versa. Those living in the hot, humid conditions of the tropics, and other warm climates, usually make marvellous recoveries in the utterly different, cold, dry, dustless climate of the Alps, etc., and in many cases are able to return to their work without relapsing.

"You can be cured just as well on a balcony at home as in Switzerland." The futility of this remark is very obvious when one considers that it is made to people living in large industrial towns, as well as in country places. The smoke-laden air of towns, with its dust and micro-organisms, can hardly be compared with the pure, thin, invigorating air of the Alps, yet I have heard this statement from many patients to whom it has been told, even so recently as this year. The beneficial effects of the air of Davos, for example, are surely apparent when we consider that, as a successful resort for tuberculous patients, it has been known now for nearly ninety years. Those people who say that different places have all been tried and praised in turn should remember that persons suffering from tuberculosis, of all nationalities, and from all parts of the world, have been visiting this resort for a great many years, and still continue to do so.

"You are not ill enough to go to Switzerland." This remark has been repeated to me by patients many dozens of times, and I really doubt whether any more wrong, misleading or foolish statement has ever been uttered. Leaving Switzerland out of the question altogether, it is in the early case, where the lesion is still small and localised, and the patient's health and resistance are good, that the most energetic measures should be taken. The patient should be clearly informed regarding his disease, and told that his best chance of getting completely cured is to spend a long time, if it can possibly be managed, over his treatment. Being told that he is not ill enough to do this only serves to give him a false sense of security, and may lead to much disappointment and ultimate loss of the chance of real recovery.

"You must not go to an altitude if you are spitting blood." There is some foundation for the popular idea that a mountain climate is not suitable for cases in which hæmorrhage occurs. It is undoubtedly true that patients such as elderly people with high blood pressure, who are chronic fibrotic cases with cavitation, will probably not do well if they are inclined to hæmorrhage. For the early, active stages, however, the mountain climate is not contra-indicated at all. In such types, blood-spitting is simply an indication of activity of the disease, and when this is arrested, the hæmoptysis stops. Such cases usually do very well at an altitude.

"You must not go to an altitude as you have a weak heart." This saying, as in the case of the patient who is spitting blood, has some truth in it, but, unfortunately, very many people who could stand an altitude and benefit by it are dissuaded from giving it a trial. I have met patients who have been told that they should not go above, say, two to three thousand feet, but who, in spite of this, have done so in fear and trembling, and have been amazed to find that they have become stronger, and better in every way, in a short time. If, however, there is organic heart trouble, especially if

poorly compensated, an altitude of even five thousand feet should not be attempted. In those types of cardiac weakness due to general debility, convalescence from disease, and flabbiness of the heart muscle—all parts of the patient's feeble general condition—there is no contra-indication to the mountains, and such cases usually do very well. The above saying has certainly discouraged many people who might have greatly benefited thereby.

"Switzerland is no good in the summer." This has become a regular saying, and one hears it over and over again. I think it must be really due to the fact that in the early days of Alpine treatment the advantages of the winter were much more largely dwelt upon than those of the summer. It is quite an error, however, to think that the Alpine climate is only beneficial during the winter months. Clinical observation has made it clear to us that the summer is at any rate equally as good, and in the opinion of medical men in Davos with wider experience, patients even derive more benefit and get quicker and more stable recoveries in the summer months than they do in the winter. In the summer the ultra-violet rays are far stronger than in the winter, the high evaporative power of the Alpine air continues to act in summer beneficially on the lung. The air is pure and free from the irritative dust and smoke of cities. The lovely scenery and the Alpine flora, and the innumerable variety of walks through pine woods, all help to make the patient happy.

"You ought to go and sit about in the sun." Persons afflicted with pulmonary tuberculosis are, even now, sometimes told to go to the South of France, the Alps, or to some other sunny part of the world, and to sit about, or lie about in the sun, and "they will soon be alright again." It cannot be too strongly emphasised that indiscriminate and uncontrolled use of sun-bathing in pulmonary tuberculosis is very dangerous, and should as a rule be prohibited. If applied in the wrong manner and to the wrong type of case, sun-bathing may easily set up flaming activity in a lung where the disease was perhaps latent or only smouldering, and would have settled down under ordinary treatment. Whilst very beneficial in cases of surgical tuberculosis, it is only in special cases of pulmonary tuberculosis that sun treatment should be advised, and even then it should be carefully watched and controlled. I feel sure, too, that the uncontrolled use of sun-bathing amongst holiday makers in the summer, so fashionable nowadays, has, without any doubt, brought to light and started activity in many cases of latent, unsuspected tuberculosis of the lung. I have personally come in contact with several cases of this kind.

To conclude, I would venture to remark that many of the above statements, statements which one hears so often, are misleading, and in some

cases really dangerous. Some of them lull the patient into a sense of false security, whilst others definitely deter him from taking those measures which he feels himself would be best. In any case they are mostly sayings which should be exploded, and I have jotted down these few lines with that purpose in view.

OILS USED IN THE TREATMENT OF PULMONARY TUBERCULOSIS

WITH SPECIAL REFERENCE TO "MUTTON-BIRD" OIL
AND DUGONG OIL USED IN NEW ZEALAND

By J. H. BLACKBURN,

L.R.C.S.(ED.)

Medical Superintendent, Westwood Sanatorium, Queensland, Australia.

THE two best known oils all over the world are cod-liver oil and halibut-liver oil.

Mutton-bird oil and dugong oil have been used both in New Zealand and the Commonwealth of Australia for many years, especially the former, and at the above Institution I have been using mutton-bird oil as an adjuvant either as the pure oil or as an emulsion. Taylors, Elliotts and Australian Drug Ltd., Brisbane, manufacturing chemists, have prepared an emulsion containing 33 per cent. by volume of the medicinal mutton-bird oil. I have used well over 50 gallons, the composition being as follows:

"ARIOL" MUTTON-BIRD OIL EMULSION

1. Mutton-bird oil.
2. Essence of lemon and cloves.
3. Spirit of chloroform.
4. Gum acacia and tragacanth.
5. Soluble saccharin and water.

It is prepared with a mixture of acacia and tragacanth gums as the emulsifying agent, flavoured with lemon, cloves and spirit of chloroform and sweetened with soluble saccharine.

Chemical Composition.

	<i>L. H. Smith.</i>	<i>Acting Government Analyst.</i>
Sp. gr. at 15.5° C.	0.8810 to 0.8858	0.884
Freezing point	Solid at 0° C.	—
Free fatty acids (per cent.) ..	2.23	2.23
Higher alcohols (per cent.) ..	36.88	38.4
Saponification value	125.9	119.6
Iodine value	71 (Wijs method)	130 (Wijs method) 108 (Hubl)
Vitamin A	—	—
Vitamin D	—	—

Clinical Results.

The results are very gratifying, there being increased weight, loss of cough, diminished sputum and general improvement all round. Up to date over 100 patients have taken the emulsion and some the pure oil.

Natural History.

Mutton-birds are a species of petrels belonging to the genus *Puffinus*, usually called shearwaters by ornithologists, and they have certain characteristics. All go in great flocks and all nest in tunnels. In 1798 Flinders and Bass recorded a flight of mutton-birds fifty yards in depth and 300 yards in width, flying in close formation, and it took one hour and a half to pass a given point. They estimated that the number could not have been less than 100,000,000.

There are several varieties: the mutton-bird of the South is *Puffinus tenuirostris*; the more common mutton-bird of the Great Barrier Reef is apparently *Puffinus pacificus*; and the typical New Zealand bird is an allied species, *Puffinus griseus*, which is also found on our southern shores.

It is a most interesting bird. Towards the end of September the scout birds arrive at dusk and again depart at daybreak. They clean out the burrows. These scout birds are not for breeding purposes. The burrows are from 2 to 7 ft. in length, and it is hardly possible to walk over the island without falling into them. About November 22 the birds arrive in countless millions at dusk from some unknown part of the world, and each couple occupies its burrow of the previous year. After a week's interval one egg is laid, and though the birds are no larger than pigeons the egg is about the size of a goose's egg. With regard to sitting on the egg, the male bird sits for the first fortnight and is relieved by the hen bird, which sits until the egg is hatched. With regard to feeding, the parent birds fly out to sea before daybreak, returning after sunset; they feed mainly on crustacea and marine algae, which contain iodine that has been subjected to the sun's rays. The food is partially dissolved and converted into oil in the

OILS USED IN PULMONARY TUBERCULOSIS 287

parent birds while in transit back to the young at night-time, and on arrival it is exuded into the chick's mouth and descends to the crop, which in turn becomes filled.

Mutton-bird season is quite an industry for the islanders and the visitors. They begin to preserve the young birds about March 20 and keep at it until all the birds have left. The young are killed, head and neck removed, plucked and finally salted and pickled in barrels. These are sold to poulterers in Melbourne, Sydney and Hobart. The crop oil is squeezed from the bird while it is still warm, and about one ounce of oil is extracted from each bird. The eggs are sold as well.

After the mating season the birds apparently work their way towards the warmer North, having been seen as far as Japan and as far East as Samoa. It is a curious fact that all the islands where the birds breed are infested with brown snakes.

DUGONG OIL

Chemical Composition.

	<i>Challinor and Penfold.</i>	<i>Mann.</i>	<i>Liverseege.</i>
Sp. gr. at 15.5° C.	0.9161	0.9203	
Refractive index	1.4628 at 30° C.	60.3 at 25° C. (butyro-refract. 1.4661)	Below 0.920
Optical rotation (2 dcm. tube)	0.21	—	0.1
Iodine value	64.26 (Hanus)	66.6	—
Acid value (mgrms. KOH) ..	0.31	4.7	5.0
Free acid as oleic acid (per cent.)	0.15	2.39	2.5
Saponification value (mgrms. KOH)	200.3	197.5	—
Unsaponifiable matter (per cent.)	0.61	3.74	0.9

Natural History.

The dugong or sea-cow belongs to the natural order Sirenia, genus *Halicore*, to which also belong the manatees, which in some respects resemble the dugong but do not inhabit the same waters.

Sea-cows are herbivorous mammals found inhabiting the shallow bays and creeks in the Red Sea, East Coast of Africa, Ceylon, islands of the Bay of Bengal, Indo-Malayan Archipelago, and in more or less abundance on the Queensland coast.

They are from 6 to 20 ft. in length. In shape it resembles a seal, the colour being grey, with a white hue on the under parts. The nose is pig-like, but is short and thick. In the hindquarters there are distinct traces of legs; some loose bones lie in this part of the body and are taken as

evidence that, perhaps millions of years ago, the sea-cow possessed nether limbs. The creature has two front legs in the form of flippers. In the female these are used for holding the youngster, and are not used much as a propelling force. The bull's teeth are made of ivory, and measure up to 7 or more inches long; his bones are of the same substance.

It is perfectly harmless and browses on sea grass mainly. These mammals are becoming scarce, as the aborigines kill them and sharks play havoc. The female looks well after the youngster, tucks it under one of her flippers and suckles it.

Dugong flesh is like pork; in fact, the flavour is exactly the same, except for the curious oily taste. Treated and turned into bacon, dugong makes a good substitute for the real article.

The oil produced is about 1 gallon per hundredweight of bodyweight of dugong.

Clinical Results.

On the recommendation of Sir R. W. Cilento, M.D., D.T.M. and H., the Director-General of Health and Medical Services, Brisbane, Queensland, dugong oil in the form of an emulsion is being used at the Woorabinda Aboriginal Settlement and also at other Settlements.

Chemical Composition of Cod-Liver Oil.

Cod-liver oil consists chiefly of olein about 70 per cent., palmitin about 25 per cent., and stearin in small quantity. Minute traces of iodine, chlorine, bromine, phosphorus and sulphur are found, but these are not in sufficient quantity to have any medicinal effect, although latterly it is claimed that iodine is in sufficient quantity to be effective.

It also contains aselline, morrhaine and butylamine (alkaloids) associated with morrhucic, formic, butyric and phosphoric acids. Cholesterin about 0.3 per cent. and traces of lipochrome.

It also contains vitamin A, not less than 600 units activity to the gramme; and vitamin D, not less than 85 units of antirachitic activity to the gramme.

I am deeply indebted to those who helped me in every possible way with regard to the natural histories, and the chemical composition of mutton-bird oil, dugong oil and cod-liver oil, and their names appear in the references below.

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DIFFICULTIES OF A CONSULTING PHYSICIAN IN DEALING WITH PULMONARY TUBERCULOSIS

BY A. RAMSBOTTOM,
M.D.(MANCH.), F.R.C.P.(LOND.),

Professor of Clinical Medicine, University of Manchester.

THE difficulties of the consulting physician in dealing with pulmonary tuberculosis are the same as those which confront the general practitioner, but differ in one important regard which operates to the disadvantage of the consultant. The patient is, in most cases, known to the family doctor, who thus has a good idea of the patient's usual standard of health, which is extremely valuable both in diagnosis and prognosis, and further he is frequently familiar with the patient's habits and temperament, both of which have an important bearing upon the prognosis and are useful guides in the selection of treatment.

Difficulties arise in diagnosis, prognosis and treatment, and to some of these points I will refer.

Diagnosis.

In the first place I would refer to the importance of symptoms as opposed to physical signs, and among these symptoms I would stress undue tiredness and loss of weight. By undue tiredness I mean the type where a patient says that he is "done" by noon; I don't mean the type where the patient gets up tired and may improve as the day goes on, for that is usually nervous.

With the tiredness there is usually anorexia. Due attention to these symptoms will often save us from the pitfall of regarding a case, particularly if it is that of a young girl, as one of anæmia until the true nature of the illness has become only too evident and much valuable time lost. Again, I would just refer to dyspeptic symptoms which may be so prominent a feature of pulmonary tuberculosis—in fact, so prominent that on more than one occasion I have known such cases to be erroneously diagnosed as malignant disease of the stomach. Of these cases I do not wish to say more, but before leaving this question of symptoms would like to say a few words about those patients who consult you complaining that they have spat blood, and a most careful clinical examination fails to reveal any evidence of pulmonary disease, and where cardiac disease, blood diseases and other possible causes of hæmoptysis can be excluded. The eternal question of “Is it from the throat or is it from the lung?” then arises, and we know how chary we are, and rightly so, in deciding that the throat is the source of the blood until we have proved it. No doubt each one of us has his way of satisfying himself upon this point. My routine in taking the history is to ascertain whether the blood is intimately mixed with the sputum and whether the patient is conscious of something welling up into the mouth which when spat out is blood, or whether the patient simply gives a cough, spits out, and notices that the expectoration is blood-stained. My experience is that in the former cases the source of the blood is frequently the naso-pharynx, whereas in the latter type it invariably comes from a lung. A careful clinical examination is then made which must include observations on the pulse-rate and temperature. The sputum is examined for T.B., followed by an X-ray examination of the chest. Should all these investigations prove negative I give a good prognosis, but advise the patient to have an X-ray examination of the chest every three months for two years. If at the end of that time there is no evidence of pulmonary tuberculosis I tell them that they have nothing to fear. I cannot recall a case where such a method has been adopted turning out later to be pulmonary tuberculosis. At one time I wondered whether some of these cases could be likened to those cases of spontaneous pneumothorax due to rupture of a tuberculous bulla, but which do not develop pulmonary tuberculosis in later life. Hans Kjaergaard, in his recent monograph on spontaneous pneumothorax, seems, however, to dispose of this theory as an explanation of spontaneous pneumothorax. In some of these, dry bronchiectasis is the cause of the hæmoptysis.

Another problem which the general physician is not uncommonly asked to decide is whether a patient who has undergone treatment and has improved is fit to start work. It is essential that work should be resumed

if possible, for such people if unemployed very readily become introspective and hypochondriacal, and in Kingston Fowler's words we have converted "a sick worker into a healthy loafer." In deciding this question we have to be guided largely by symptoms and to realise that the presence of physical signs, even signs of cavitation, are not a bar to employment provided that the temperature is normal, the pulse-rate is within normal limits, there is no undue tiredness, and the patient feels well and is gaining weight. At the same time it is important to impress upon the patient the necessity of leading a regular life and to take immediate care and to retire to bed should he contract a cold or influenza, for in many cases these alleged intercurrent maladies are really relapses of the tuberculous process.

Treatment.

Having determined the diagnosis, the rôle of the general physician in the great majority of cases is to persuade the patient that it is advisable for him to go to a sanatorium. This is, as a rule, not difficult, for the physician himself, being convinced of the overwhelming advantages of such a course, speaks with such confidence and conviction that the patient soon consents and such objections as leaving home for a more or less prolonged period, and the one-time apprehension of stigma attaching to a man who had been a patient in a sanatorium are readily overcome. Not only are the benefits to be gained by the regulated life in a sanatorium pointed out to him, but also that should the more active forms of treatment become necessary he will be ideally placed for receiving them; and after all the ultimate decision of whether artificial pneumothorax or thoracoplasty is necessary must be left to a tuberculosis expert as the most competent to judge, the general physician being guided by such generalisations as that artificial pneumothorax is eminently suitable for early and acute unilateral lesions in young adults, where adhesions are not likely to be marked and the patient is likely to stand the shock. I am more hesitant in recommending treatment in a sanatorium for middle-aged men with chronic lesions which have probably existed for many years with little inconvenience to their general health, and only the incidence of some acute infection such as influenza has betrayed the condition to physical examination. These cases can, I think, often be treated satisfactorily in their homes provided that those homes are suitably placed and that they can have quiet rest and the necessary comforts. In doubtful cases one advises the taking of the temperature systematically and a further X-ray in two or three months, and if this shows the suspicious area to be no longer doubtful but definite, sanatorium is advisable.

Prognosis.

The difficulty of prognosis has been recognised ever since pulmonary tuberculosis has been known. We are influenced not only by the extent and type of disease but also by such general factors as family history, temperament, habits, and the conditions under which the disease was contracted. The man who has developed the disease while working under adverse conditions is more likely to benefit by being placed under good conditions than is the man who has contracted it while leading what may be regarded as a healthy open-air life—*e.g.*, a farmer. Again, Traill and others have demonstrated the help that can be obtained by the application of the sedimentation test. In most cases, however, one has to wait and be guided by the response to treatment.

CLINICAL CASES

AN EXTREME CASE OF EMPHYSEMATOUS
BULLA FORMATION

BY G. S. ERWIN,

M.B.

Resident Medical Officer, Brompton Hospital.

VESICULAR emphysema is a not infrequent sequel of many types of lung disease, tuberculous or otherwise, though from time to time it occurs for no apparent reason. The vesicles are usually of modest size and, being situated at the periphery of the lung, are unlikely of themselves to embarrass the patient. Rupture of a bulla causes spontaneous pneumothorax, which, if valvular, may call for urgent intervention, and such an event is occasionally the first sign of the disease.

The case here recorded is of interest in that the preceding disease is known and that the development of large bullæ has been recorded radiographically.

M. C. Aged 22. Apart from a history of four attacks of broncho-pneumonia and the usual fevers in childhood, the patient had been well, and had been nursing for several years when, towards the end of May, 1935, she had an attack of tonsillitis lasting eight days. She returned to duty and was engaged in a street collection on a wet day in mid-June when she caught a "chill."

Shivering during that night was followed a day or two later by a cough and pain in the front of the chest, which led to her being warded on June 19. Irregular pyrexia continued, and a 2-ounce hæmoptysis occurred on July 24, this being repeated in lesser degree at intervals during the next fortnight.

On admission, on September 16, to Brompton Hospital under Dr. Burrell, she was orthopnœic and had 3 or 4 ounces of purulent, offensive sputum per day. T. 103°, P. 120, R. 30. Clinically her fingers were clubbed, and in her chest the heart was displaced to the left, dullness and absence of breath sounds being noted at the left base. Aspiration yielded 3 c.c. of pus, presumably from the lung; and radiography showed in the left lung some middle zone consolidation suggestive of broncho-

pneumonia, whilst the lower lobe was massively collapsed. The sputum was repeatedly negative for tubercle bacilli. On October 18 it was noted that the sputum had increased to 12 ounces a day, and that tubular breathing and bronchophony, evidence of patency of the main bronchus, were to be heard at the left base. X-ray examination showed considerable upward extension of the pneumonitis on the left side.

On October 28 a rib resection was performed, and, the pleura being adherent, the lung was incised and a small loculated cavity communicating with a bronchus was opened and packed. The surrounding lung tissue was infected and disintegrating. Five days later the packing was replaced by a tube, but no significant change in the patient's condition had occurred.

On November 19 an X-ray showed the appearance of several large cavities in the left upper zone. Thenceforward the pyrexia and sputum very gradually decreased, but another film taken on January 18, 1936, showed that the excavating process in the left upper lobe had progressed so that the appearance was that of a collection of air-containing cysts separated only by thin walls. The base was unchanged, but for the first time there was evidence of pneumonitis in the right upper zone, with emphysematous bullæ at the extreme apex. Further X-rays during the next three months showed decrease of the pneumonitis in this area *pari passu* with increase of size and number of the bullæ, which eventually replaced the whole of the upper zone of lung tissue.

On May 15 bronchography showed total saccular bronchiectasis of the left lower lobe, but the opaque oil did not enter the "cysts" in the upper lobe. However, one or two secondary bronchi, cylindrically dilated, were faintly outlined between the bullæ in both upper lobes. The bronchi outlined in the right middle and lower lobes were normal.

During 1936 occasional hæmoptyses occurred, and progressive amyloid disease was observed. Apart from these complications the patient made good progress, and the radiographic appearances remained stationary during the latter half of that year.

On January 7, 1937, she was transferred to a home for incurables, her condition at the time of discharge being: T., P., R., normal. Sputum 1 ounce, negative T.B., up several hours. The tube was still in position draining the chronic abscess.

The primary condition was evidently a lung abscess; whether arising from aspiration of septic material during the tonsillitis, with a subsequent silent interval, or from breaking down of a pneumonia (the "unresolved pneumonia" of last century or the "pneumonitis" of this) cannot now be determined with any certainty, but since aspiration is so common a cause of lung abscess one rather inclines to the former view. Massive collapse of the left lower lobe occurred, probably as a result of impaction of a plug of sputum from the abscess, and the pneumonic infection spread thence to the left apex. Resolution or fibrosis, or a combination of both, set in train the mechanism of bulla formation, and further pneumonitis at the right apex ensured a similar fate for that part of the lung.

PLATE XIV

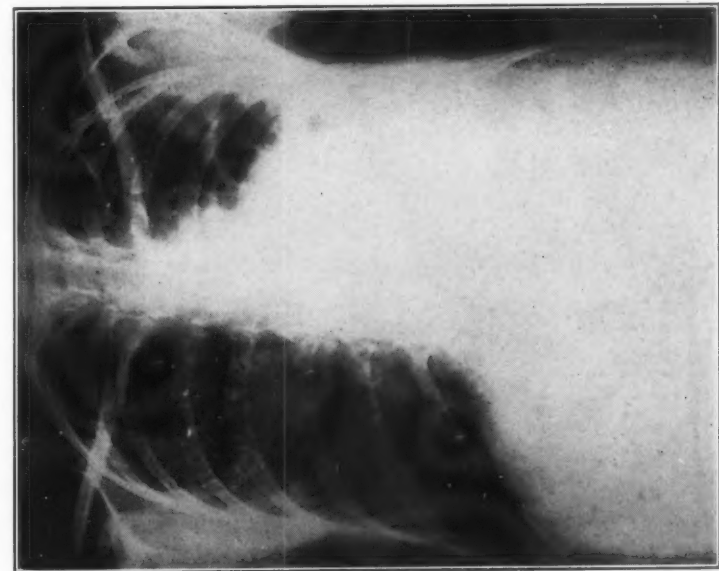


FIG. 1.—ON ADMISSION TO HOSPITAL.

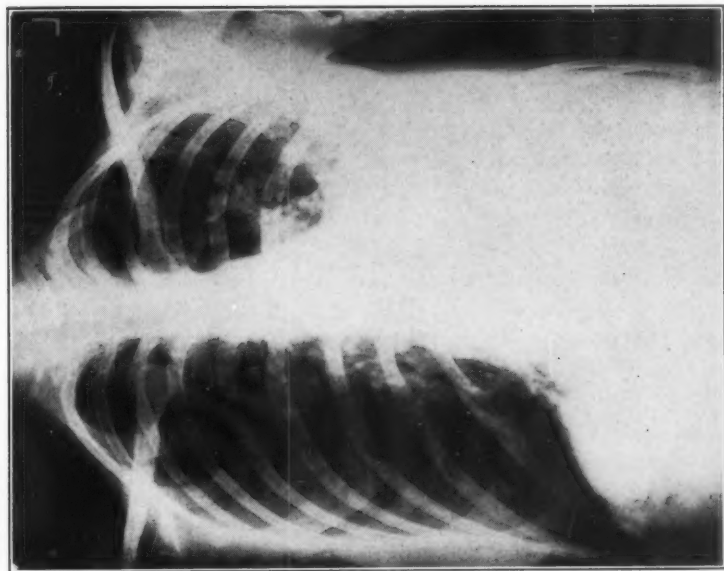
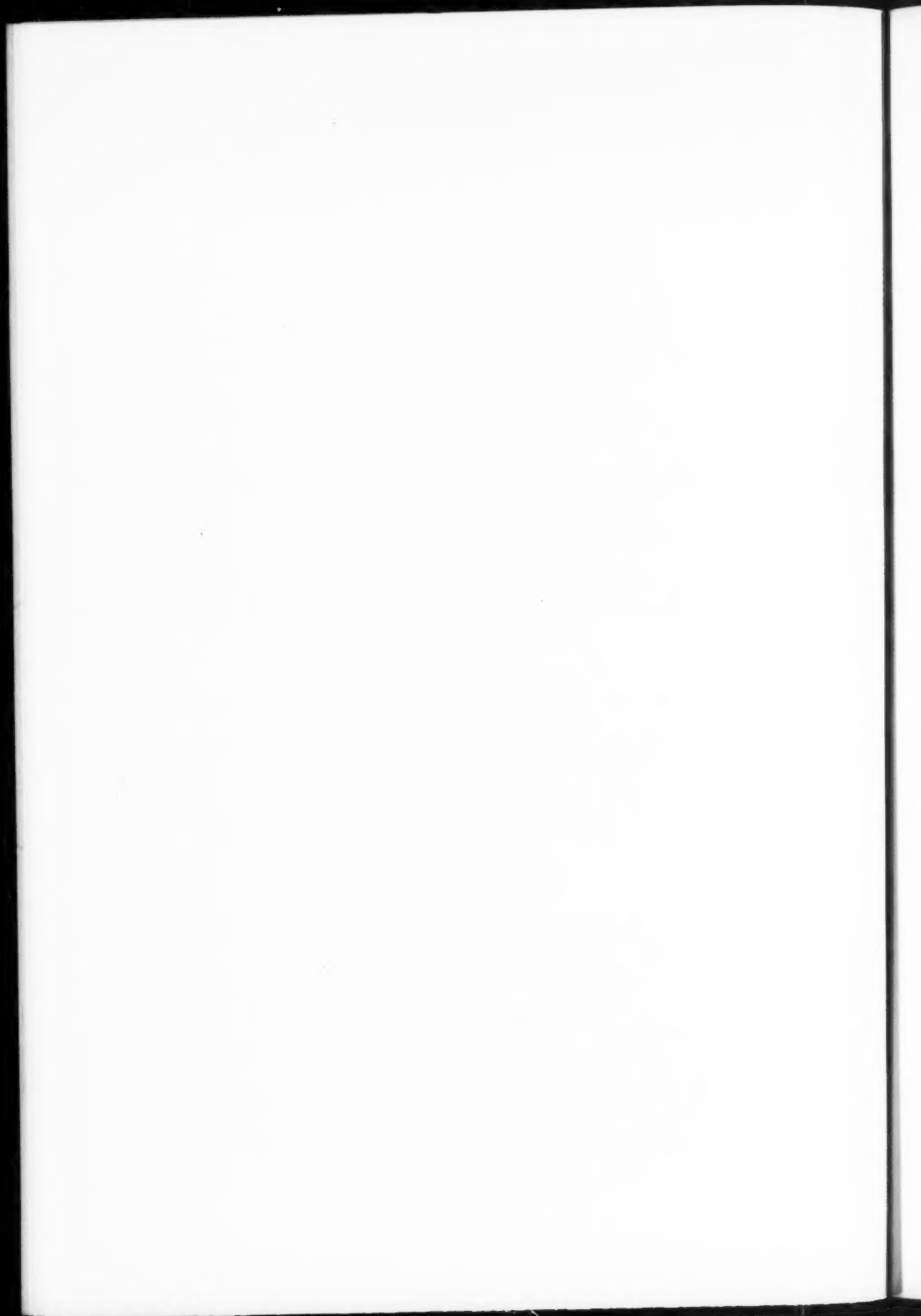


FIG. 2.—CONDITION OF LUNGS AT TIME OF DISCHARGE,
SIXTEEN MONTHS LATER.

To face page 294.



It is of interest to consider other possible explanations of the radiographic appearances here presented. In the first place it has been suggested that the "cysts" might be further lung abscesses occasioned by the breaking down of the preceding pneumonic process. Apart from the fact that abscesses do not in practice form at the extreme apices and do not as a rule show septa of the flat variety exhibited by this case, there have not at any time been fluid levels in the vesicles. Of the other suggestion that they might be infected congenital cysts of the lung it is sufficient to say that the visible development of these cysts in previously healthy lung precludes the idea. Moreover, this case illustrates the danger of making such a diagnosis from a single X-ray. Were one presented with only the last X-ray of this patient the possibility of a congenital origin would have to be considered, unlikely though it would be.

The patient is at the moment in a clinically stable condition, respiring with little more than two lobes, and may remain so for many months, but it seems probable that she will eventually succumb to the amyloid disease, or to bronchitis or pneumonia, diseases which are so disastrous to those with reduced vital capacity.

I am indebted to Dr. L. S. T. Burrell for permission to publish this case.

ALLERGIC ECZEMA DUE TO TRAUMA COMPLICATING AN ARTIFICIAL PNEUMOTHORAX

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M.B., D.P.H.

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THE following note is written of a case of pulmonary tuberculosis treated by artificial pneumothorax which developed a most unusual complication, a complication which nearly led to the abandonment of the pneumothorax.

Mrs. A. L., aged thirty-one, was admitted to the sanatorium on June 15, 1936, with a six months history of loss of weight, cough and night sweats. She was found to have right-sided disease with cavitation and a right artificial pneumothorax was induced at the end of July. After the establishment of the pneumothorax, weekly refills were carried out without incident until September, when the patient began to complain of irritation around the site of puncture. The technique used at this time was to cleanse the

skin with ether spirit and paint with tincture of iodine, novutox being used as a local anæsthetic.

The skin appeared to be perfectly healthy when the patient first complained, but shortly afterwards small papulo-vesicles scarcely raised above the skin appeared in a crop around the puncture site. The irritation was now becoming very severe, and change of puncture site led to a fresh crop of vesicles around the new site.

It was at first thought the condition was a tissue reaction to the iodine, so a change was made to an aqueous solution of picric acid with no alleviation of the condition (apparently picric acid in respect to tissue irritation has almost as evil a reputation as iodine).

Later, in October, the skin over the chest assumed a uniform lichenoid appearance over a considerable area and went on to a weeping eczema which was sufficient to make the patient's condition miserable.

The local anæsthetic was then considered likely to be the cause and several other proprietary anæsthetics were tried without any appreciable effect. The local anæsthetic was then dispensed with, atropine sulphate grs. $\frac{1}{120}$ being administered hypodermically to obviate pleural shock. No improvement was shown, however, and the abandonment of the pneumothorax seemed to be the only solution.

The condition was considered to be due to sensitisation to the trauma of skin puncture, patch testing with the various substances used not producing the condition on the arms.

The treatment followed was to discontinue injections of atropine, to cleanse the skin with ether spirit only and not to use local anæsthetic.

A lead and opium lotion was applied on lint locally during the day and the following ointment at night:

Zinc oxide	..	..	..	..	..	3i.
Glycerine of lead subacetate	..	..	..	..	..	℥xv.
Starch	..	..	..	..	..	3i.
Yellow soft paraffin	..	..	..	..	..	ad 3i.

and the administration of ephedrine tablets gr. $\frac{1}{2}$ twice a day.

Atropine sulphate is apparently of no help in allergic conditions. It is of interest that no history of any previous allergic condition could be elicited.

Under this régime the condition rapidly cleared up and a right phrenic crush was performed in December, 1936, without incident.

When an attempt was made to dispense with the administration of ephedrine the condition started to recur, but was abolished once the ephedrine was restarted.

Further treatment considered, but fortunately not necessary to attempt to carry out, was the desensitisation of the skin with X-rays in half-pastille doses. However, whether this would have proved practical with the necessity of repeated trauma and the obvious difficulty in repeating desensitisation doses is problematical.

My gratitude is due to Dr. A. Bingham of the Manchester and Salford Skin Hospital, who saw this case, and to Dr. H. G. Trayer, the Medical Superintendent, for his advice and help on all occasions.

UNUSUAL RESOLUTION OF A TUBERCULOUS CAVITY

By A. S. HERINGTON,

M.B., B.CH. (CAMB.)

Assistant Medical Officer, King Edward VII. Sanatorium, Midhurst.

The particular interest of this case is radiological.

It will be seen from the series of X-ray films (Figs. 1 to 3) that at the time of the earliest film there was a left subclavicular lesion containing a cavity with a fluid level. This cavity became smaller and disappeared; and the final picture shows the lesion as a localised homogeneous shadow of "ground glass" appearance. No cavity is now visible—nor can it be seen on a film taken with increased penetration.

The final appearance, in fact, resembles an Assman's focus: if the films were to be arranged in the reverse order they would exactly represent the process of cavitation in an Assman's focus. That the opposite process may occur seems worthy of record.

The following is a brief clinical account of the case:

The patient is a single woman, a schoolmistress, aged 53. She had a healthy childhood, and a healthy adult life until the time of the war, when she became very "run down," and subsequently she has suffered from recurrent attacks of biliousness and "colitis." In 1930, at the age of 46, her condition was investigated at a London hospital, and it is reported that she had "a marked secondary anaemia and hypotonic gastro-intestinal tract," but that "there was nothing to suggest tuberculosis at that time."

There is no family history of phthisis; nor can any history of contact be elicited.

The first sign of her present illness appears to have occurred in June, 1936, when she had a "gastric attack," which confined her to bed for

five days. This differed from previous bilious attacks in being accompanied by feverishness (temperature 102° to 103°) and night sweats, and left her with a slight dry cough.

In August, 1936, a similar attack occurred: and in September she became feverish for a third time, when her cough became worse and a little sputum developed. This was examined and found to be negative, but her chest was X-rayed and the diagnosis of pulmonary tuberculosis was made. She was in bed for ten days, and then went away for a holiday to Devonshire, where her cough entirely disappeared.

In December, 1936, she consulted Dr. S. R. Eastwood, as a result of which she was ordered complete rest in bed. Fig. 2 shows an X-ray of her chest condition at that time. Her sedimentation rate (1 hour Westergren) was then 10 mm. There was no sputum and the temperature was subnormal.

The patient remained on strict rest until she was admitted to the King Edward VII. Sanatorium, Midhurst, on April 2. The cavity had then disappeared (Fig. 3). There were a few fine crepitations in the left subapical region. Her sedimentation rate ($\frac{1}{2}$ hour micro method) was 25 mm.

After two months, during which time she was slowly advanced in the sanatorium régime, her sedimentation rate dropped to 15 mm., the physical signs disappeared and she was able to walk one and a half miles a day without reaction. She has had no cough or sputum and no rise of temperature above normal.

The chest lesion would now appear to be stable.

I wish to thank Dr. S. R. Eastwood and Dr. L. S. T. Burrell for their permission to record this case.

A CASE OF BRONCHIECTASIS WRONGLY DIAGNOSED AS PULMONARY TUBERCULOSIS

By Y. G. SHRIKHANDE,

M.B., B.S., T.D.D. (WALES)

Medical Superintendent, King Edward VII. Sanatorium, Bhowali, India.

S. N. D., male, twenty-one years of age.—The patient came to me for consultation with a history of chronic cough of some years' duration. About a couple of months back he spat blood in small quantities on two different occasions. The temperature was normal except during the period of hæmoptysis, when it rose to 100° F. Appetite was good and there was practically no loss of weight. He gave a history of bringing up a fair amount of sputum for a few days, after which it stopped completely. The

PLATE XV

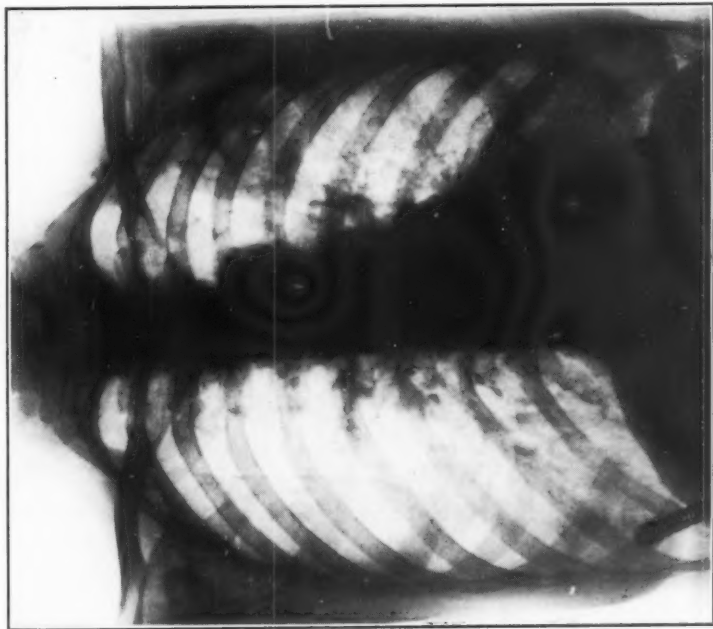


FIG. 1.—FILM ON OCTOBER 27, 1936.

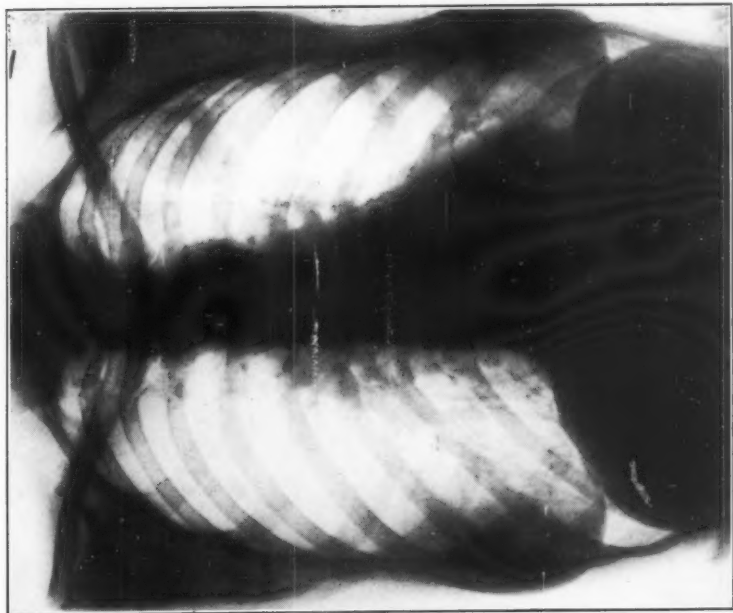


FIG. 2.—FILM ON DECEMBER 11, 1936.

[To face page 298.]

PLATE XVI

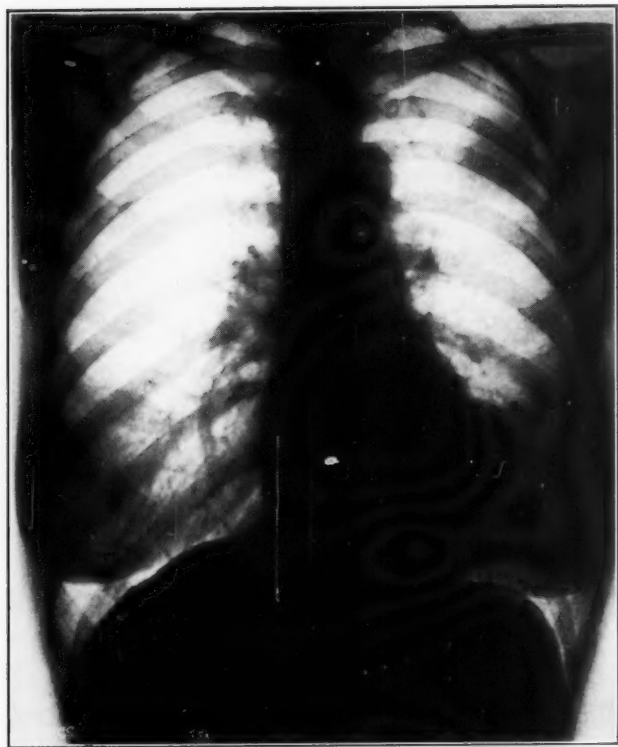


FIG. 3.—FILM ON APRIL 6, 1937.

sputum was not foul-smelling, at any rate the patient did not notice it. History of pneumonia in childhood. He was seen by doctors at his native place (Allahabad) and diagnosed as a case of pulmonary tuberculosis and sent off to the hills for treatment.

Report of X-ray taken at Allahabad says: "Extensive fibrotic condition of the left lung with adhesions and slight involvement of the right lung at the hilar region."

On examination there was seen some tendency to clubbing of the fingers. The left side of the chest was flatter than the right and movements were restricted on this side. Vocal fremitus and vocal resonance were diminished and the apex beat was also displaced to the left. Cog-wheel breathing was heard over the entire left lung, but no adventitious sounds were heard. Sputum was found negative for acid-fast bacilli.

The X-ray film brought by the patient did not show any evidence of infiltration in the lung fields, but there was a marked honeycombed appearance in the entire left lung field with fluid levels in the round shadows.

Taking all the evidence of the case into consideration, I thought the case was one of bronchiectasis and not of tuberculosis.

A second X-ray picture after injecting lipiodol into the bronchial tree of the left side through the crico-thyroid membrane confirmed the diagnosis of bronchiectasis.

Remarks.

The above case is one of the several that are wrongly diagnosed as cases of pulmonary tuberculosis and sent to sanatoriums for the treatment. The history of the case together with the physical findings and X-ray appearances should be sufficient to label the patient as "non-tuberculous" as far as the activity of the disease was concerned. The popular view that bronchiectasis is characterized by large quantities of foul-smelling sputum must be revised. Until recently only those cases were recognised in whom the condition had become advanced and the symptoms were marked. With the increasing use of X-ray in the diagnosis of chest conditions and the improvement in its technique, as also in the interpretation of shadows and with the injection of iodized oil to outline the bronchial tree more clearly, much light has been thrown on the early and latent stages of bronchiectasis. As the oil casts dense shadows on the film the injected bronchial tree stands out clearly and the dilatations are revealed in many cases in which the physical examination of the chest failed to show them. In the case mentioned above, the X-ray appearances even without lipiodol were characteristic enough to make a diagnosis of bronchiectasis.

The presence of hæmoptysis is apt to lead to a wrong diagnosis. It must not be forgotten, however, that while pulmonary tuberculosis is the most common cause, it is not the only one and that bronchiectasis is usually associated with hæmoptysis.

Another mistake that commonly leads to a wrong diagnosis is the failure to examine the sputum. The absence of tubercle bacilli in definitely purulent sputum on repeated examinations, as pointed out by Burrell, is very strong evidence against tuberculosis. When doubt still exists, guinea-pigs may be inoculated with the sputum.

CONSULTATION

CASE

By GEOFFREY MARSHALL,

M.D., F.R.C.P.

Physician to Guy's Hospital and to the Brompton Hospital for Consumptives and Diseases of the Chest.

Mrs. T., aged sixty-two, had been subject to attacks of spasmodic asthma for many years. She was a vigorous and dictatorial old lady with three daughters and several grandchildren.

For the relief of the asthma she had consulted a number of practitioners, in this country and abroad, until in December, 1934, she met with one who prescribed hypodermic injections of heroin. She became an addict to this drug, and from that time continued to have at least two injections daily. In the early months of 1935 she was feeling well, and arranged to leave England in order to visit friends in Bermuda. She embarked on a ship on April 2, and on the first day at sea had a shivering fit, and her mouth temperature rose to 102.8° F. On the following day it swung from 101° to 105° , and this hectic pyrexia with maximum reading of 104° to 105° continued until April 12. In the meantime she developed a spasmodic cough, with occasional vomiting. On April 12 she coughed up a cupful of bright red blood, and the pyrexia was reduced to a lower level, averaging 99° in the mornings and 101° in the evenings. She was now troubled by pain above the left breast, which was accentuated by cough or a deep breath, and she expectorated about 5 ounces of sputum daily. The sputum came up in thick yellow lumps, and it had an unpleasant taste and smell. There were profuse nightsweats, and during the last three days of the voyage she suffered from diarrhoea. On reaching Bermuda she was taken to hospital, where the diarrhoea ceased, but the other symptoms continued, and after a week she embarked on another boat and returned to England.

When seen in London on May 14, 1935, her general condition was very fair, despite the swinging pyrexia and copious purulent expectoration.

There was no cyanosis or oedema, and the fingers were not clubbed.

The mouth and throat were clean, no enlarged lymph glands could be felt and nothing abnormal was detected in the abdomen or in the urine.

The chest was barrel-shaped, and movement was diminished on the left side. Resonance was impaired over the front of the left chest from the third to the sixth ribs. Air-entry was diminished in this part of the chest and ægophony was present. The sputum contained pus and gave a profuse growth of pneumococci. No tubercle bacilli and no elastic fibres could be detected. A blood-count recorded 12,000 leucocytes per cubic millimetre, with a relative increase of polymorphonuclear cells.

Lung abscess was diagnosed, and skiagrams of the chest taken on the following day were confirmatory. These showed an opaque area above the outer half of the interlobar septum of the left lung, with a poorly defined cavity in the midst of the opacity. Bronchoscopy showed pus in the left upper lobe bronchi, but there was no evidence of growth or foreign body.

Under expectorants and postural drainage little improvement was achieved, so after ten days the chest wall was incised over the superficial aspect of the abscess, portions of two ribs being removed. Lung and chest wall were found to be firmly adherent, so the abscess was laid open and a large drainage tube inserted. There was a rapid improvement in the patient's condition, and she has been in fair health ever since. The wound in the chest wall was allowed to heal after three months, but there has always been an ounce or more of purulent but inoffensive sputum each day, doubtless indicating bronchiectasis in the neighbourhood of the original abscess.

Summary.

The symptoms at onset were characteristic of lung abscess; a rigor followed in due course by hæmoptysis and foul sputum. Its causation is worthy of consideration. I have seen several asthmatic patients with lung abscess, and in two instances this followed administration of atropine. I attributed the abscess in those two cases to bronchial obstruction brought about by a plug of sputum. Chevalier Jackson has shown us how remarkably viscid the sputum of asthmatics tends to be: and the administration of atropine would be likely to increase this viscosity. The question arises whether in the present case the heroin might have contributed to the disaster by depressing the cough reflex, thus preventing the dislodgement of a plug of sputum which was obstructing one of the smaller bronchi.

MEETINGS OF SOCIETIES

JOINT TUBERCULOSIS COUNCIL

At the May Meeting of Council twenty-two members were present. The Secretary announced that 750 copies of the Memorandum on Tuberculosis among Nurses had been printed. The Medical Research Council were considering the re-publication of the Memoranda by Drs. W. H. Tytler and Peter Edwards on the Microscopic and Cultural Examination of Sputum. The Registrar-General had written that a tuberculosis mortality figure for the nursing profession would be included in the Occupational Mortality Volume of his decennial supplement to be issued about the end of this year, but no special statistics of nurses in tuberculosis institutions are available.

Mr. Harry Platt of Manchester was elected to fill the Council vacancy.

After a discussion on the Empire Conference on the Care and After-Care of the Tuberculous, recently held at Overseas House, it was decided to form a committee comprising Dr. S. Vere Pearson (Convener), Dr. Jane Walker, Profs. W. W. Jameson and S. Lyle Cummins, with Drs. J. B. McDougall, F. R. G. Heaf and F. W. Goodbody, "to consider what help this Council can give the Colonies in their effort to control tuberculosis."

On behalf of the Milk Committee Dr. Hawthorne gave an informative verbal report. He gave some account of nutrition experiments now being undertaken at the Rowlett Institute and at Reading to ascertain the relative food value of pasteurised and untreated milk. So far the rat had been the experimental animal, but work on calves was now commencing. The Government had promised legislation on pasteurisation and Dr. Hawthorne would endeavour to ascertain when that would be introduced and what measures are proposed.

Dr. Brand gave an account of recent post-graduate courses which he had organised. A Victoria Park course, February 1-6, had been attended by eighteen, and Drs. Trail and Kerley had given a course at the City Road Hospital with seventeen participants. A course in artificial pneumothorax would be undertaken at Brompton Hospital and Dr. Peter Edwards would continue his courses at Market Drayton.

The question of "holidays with pay" was raised by Dr. Blackmore and it was decided to place the subject on the next Council Agenda.

POST-GRADUATE COURSES AT BROMPTON HOSPITAL

THE Joint Tuberculosis Council have much pleasure in announcing that arrangements have been made with Dr. Fenton, the Dean of Brompton, for Courses of Fourteen Sessions in Artificial Pneumothorax Work, each course to extend over a fortnight. The classes will be held at the following hours:

Mondays,	10.0 a.m.	Fridays,	10.0 a.m.
"	2.0 p.m.	Saturdays,	10.0 a.m.
Tuesdays,	10.0 a.m.	"	2.0 p.m.
Thursdays,	6.30 p.m.		

Included in this there will be two lectures on the general aspects of Artificial Pneumothorax Therapy, and detailed instruction in screening. After the members of the class have had a few days' experience of the practice at Brompton they should perform the actual refills, and, if possible, an induction themselves.

Each course will be limited to four members.

The actual duration of the clinics will vary with the number of cases to be dealt with, but an average of two hours is a near approximation. Fee, £5 5s.

All enquiries to be addressed to: William Brand, Hon. Secretary for Post-Graduate Courses, Joint Tuberculosis Council, 8, Christ Church Place, Epsom, Surrey.

THE NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS

THE twenty-third annual meeting of the Association was held at Bristol from July 1 to July 3. It was particularly disappointing that the Chairman, Sir Robert Philip, was prevented by illness from being present, as this year is the fiftieth anniversary of the opening of the first British tuberculosis dispensary by him in Edinburgh. In celebration of this one session was devoted to the dispensary system and was opened by Dr. Faill, the tuberculosis officer for Bristol, who said that the dispensary was the most important part of the tuberculosis scheme. Dr. R. M. Hiley said that the treatment of surgical tuberculosis should be left to the tuberculosis officer. In the county of Glamorganshire, the results of treating bones and joints at home had been excellent during the past five years.

Speaking on the subject of propaganda, Dr. Harley Williams said that it taught tuberculous patients and their friends and relations to face the inevitable. It is most important, he said, to abolish fear and to teach the

public that it is a curable disease. Dr. Hawkins said that the majority of young women who entered a sanatorium had no knowledge of health, a subject which in her opinion should be taught more in schools.

Dr. Ralph Williams spoke of the advantages of the open-air school.

There was still too great a lack of fresh air in civilised life and this increased the risk of droplet infection. The headmaster of Clifton College, Mr. Norman Whatley, said that the boys were allowed more sleep in recent years, and he regarded a sufficiency of sleep as important as food for the growing child. Dr. J. E. Wilson stressed the value of open-air education.

Whilst admitting that good feeding could neither prevent nor cure tuberculosis, Professor J. A. Nixon stated that underfeeding played a big part in weakening resistance to disease. Animal fat was especially useful and young people especially should be given a full diet. Dr. P. A. Galpin said that animal fats and green vegetables were protective foods, and those who did not eat a sufficiency of these were more likely to develop tuberculosis.

The Transactions of this meeting have been published and may be obtained from the Secretary at Tavistock House North, Tavistock Square, W.C.

Lt.-Col. E. D. Caddell, M.C., M.B., late R.A.M.C., has been appointed as Secretary-General of the National Association for the Prevention of Tuberculosis.

TUBERCULOSIS ASSOCIATION

A MEETING of the Association was held at Manson House on Friday, February 19, with the President, Dr. S. R. Gloyne, in the chair.

Dr. W. J. Fenton read a paper on Simple Pleural Effusions. He said that liquid in the pleural cavity could transmit pressure but not exert it. It could become under pressure as a result of compression of the surrounding tissues.

In his opinion small effusions should be left alone, but large ones might be helped to resolve by the removal of a small quantity. Gas replacement tended to retard absorption, and should not be done unless there was activity in the underlying lung and it was decided to maintain a pneumothorax.

Dr. E. H. Hudson said that an effusion might become encysted and appear in almost any position in the chest, producing an X-ray shadow which it was difficult to interpret. In his experience it made little difference to the prognosis whether the effusion was allowed to absorb naturally or aspirated or gas replaced, but he advocated expectant treatment unless there was some

special indication. Eighty-seven per cent. of patients who had sanatorium treatment after pleural effusion were alive and well five years later, but only 75 per cent. of those who had a short period at a convalescent home but did not go into a sanatorium.

Dr. Watt favoured sanatorium treatment for these patients, but Dr. Burton-Wood thought it most important to keep children recovering from pleural effusion from exposure to further infection. He agreed with Dr. Fenton that gas replacement retarded resolution of the effusion.

In the evening Dr. Otto May read a paper on Life Insurance and Tuberculosis. Actuarial figures showed that mortality was increased in cases with a family history of pulmonary tuberculosis, especially if the proposer were young or under weight. If the proposer gave a history of pulmonary tuberculosis himself the risk was considerable, and Dr. May said that in cases of Group 1 in the Turban-Gerhardt classification the mortality in the first year after leaving sanatorium was seventeen times greater than the expected mortality for normal people; after five years it was twelve times; after ten years eight times, and even after twenty years it was three times. It should be noted that these figures apply to the mildest type of T.B. positive case—*i.e.*, Group 1.

He pointed out that life insurance in these cases would necessitate an enormous premium, but this might be overcome by a heavy reducing lien, in which the amount of the lien could be reconsidered after a few years. A history of pleurisy was regarded as tuberculous for insurance purposes and some lien was imposed for at least seven years. He said that overweight in the young and underweight in old people was best for insurance.

On May 21, 1937, a meeting was held at Manson House, the President, Dr. S. R. Gloyne, in the Chair. Dr. A. Stanley Griffith opened the session with a paper on Bovine Tuberculosis in Man. He stated that a definite proportion of the milk supplied in this country contained tubercle bacilli, and in his opinion human tuberculosis of bovine origin was common. The bovine bacillus caused pulmonary tuberculosis which could not be distinguished from that due to the human type. Farm workers had been found with bovine bacilli in their sputum, so that disease might be contracted from them as well as from milk. In his opinion bovine tuberculosis was a serious menace.

Professor Lyle Cummins said that Malta fever had been stamped out in Malta and disease from milk could equally well be eliminated.

Dr. James Watt opened the evening session on the Radiological Classification of Pulmonary Tuberculosis. He said that radiology had largely

supplanted clinical examination, and that although the immediate condition could best be judged by estimating the symptoms and degree of toxæmia from which the patient suffered, the ultimate prognosis depended on the actual degree of disease in the lungs which could be determined better by X-ray examination than by any other method. His suggested radiological classification was as follows:

- A. Primary stage.
- B. Pleuritic forms.
- C. Miliary pulmonary tuberculosis.
 - 1. Proliferative.
 - 2. Exudative.
- D. Phthisis.
 - 1. Productive.
 - 2. Exudative.
 - 3. Exudative cavernous.
 - 4. Fibro-cavernous.
 - 5. Fibroid.

Dr. Burton Wood said that to classify shadows was a problem more difficult than to classify anatomical changes in the lungs. He agreed that radiology was important in diagnosis and classification and described the significance of various shadows.

- 1. Fine strippling was found in cases of acute miliary tuberculosis.
- 2. Snowflake strippling suggested chronic miliary tuberculosis.
- 3. Dense strippling was seen in cases of calcification.
- 4. Marbled shadows indicated tuberculous broncho-pneumonia.
- 5. Rounded shadows were found sometimes with primary disease and sometimes with secondary, as, for example, the Assman focus.
- 6. Uniform opacities might indicate collapse of lung, epituberculosis, effusion, pneumonic consolidation or a variety of conditions.

Dr. S. Vere Pearson said that classification by radiology was overdue, but that prognosis by means of X-ray findings should go hand in hand with the condition of the patient as determined by symptoms and clinical examination.

ANNUAL MEETING

THE annual provincial meeting of the Association was held at Manchester on June 10, 11, and 12, 1937. It was arranged jointly with the North-Western Tuberculosis Society, and a large gathering attended the meetings.

Dr. Geoffrey Marshall opened the session with an address on Collapse Therapy. Pneumothorax was the method of choice and was less dangerous

than other methods. Phrenic evulsion or crushing the nerve might be of value in combination with pneumothorax or in cases in which adhesions prevented a satisfactory collapse by means of pneumothorax. In his opinion apicolysis had but a limited field, and thoracoplasty was a serious operation which might produce dramatic results but which was held by patients, and perhaps rightly, as a last resort.

Mr. Morriston Davies said that when thoracoplasty succeeded in collapsing cavities the benefit was enormous, but that a partial thoracoplasty often led to a spread in the lower lobe. He thought that if artificial pneumothorax was inefficient, thoracoplasty should be performed.

Mr. J. E. H. Roberts said that the real test of the value of thoracoplasty was the fact that it did prolong life in well-chosen cases. He said that in all cases of chronic pulmonary tuberculosis when the patient had copious sputum there was bronchiectasis. Collapse of lung resulting from a blood clot in tuberculosis was followed by bronchiectasis unless the lung could be made to re-expand.

Dr. J. B. McDougall showed an interesting series of films taken at Preston Hall by the Tomograph. By this method lesions in the lung or elsewhere can be localised, and it is possible by focusing to eliminate shadows in front of or behind the lesion it is desired to see.

An interesting discussion was held on My Chief Difficulties in dealing with the Tuberculosis Problem, by a consulting physician (Professor A. Ramsbottom), a general practitioner (Dr. W. F. Jackson), a tuberculosis officer (Dr. D. P. Sutherland), a medical superintendent of a mental institution (Dr. A. Dove Cormac), and a medical officer of an industry (Dr. R. E. Lane).

The full text of Professor Ramsbottom's opening paper is published in this issue.

Dr. Jackson said that as a general practitioner his chief difficulty came from the financial position of his patients. The working classes could not afford to be ill, and employers often refused to have workers who were suspected of being tuberculous. As a result the patient did not want to be notified and would not come for examination in the early stages of his complaint.

Dr. O. M. Mistal, of Montana, Switzerland, read a paper on Pleural Effusion resulting from Thoracoplasty. Dr. de Bloeme, of Holland, discussed the treatment of unilateral pulmonary tuberculosis and stated that in his opinion phrenic evulsion was most valuable. Out of 166 cases of unilateral disease he had treated 101 by collapse of the lung, but the change of sputum from positive to negative was no greater in those cases treated by collapse than it was in those treated conservatively.

Dr. Peter Edwards said that in his experience phrenic evulsion was a great aid to artificial pneumothorax in suitable cases, but he had seen no advantage from it as an operation alone.

Dr. C. D. S. Agassiz read an interesting paper on the indications and results of artificial pneumothorax in children.

Dr. E. H. A. Parks and Dr. G. Jessel described problem cases on which a full discussion followed.

The annual dinner was held at the Midland Hotel on June 11, with the President, Dr. S. Roodhouse Gloyne, in the Chair.

Amongst the many attractions arranged for the meeting may be mentioned the visit to Baguley Sanatorium, where the Superintendent, Dr. Trayer, provided a most instructive programme.

A meeting of the Association has been arranged to take place in Paris from October 14-17, and a large number of members have already notified their intention to be present. Those wishing to attend should apply for details to Dr. F. G. Heaf, Hon. Secretary, Manson House, 26, Portland Place, W. 1.

REVIEWS OF NEW BOOKS

The Lung. By WILLIAM S. MILLER, D.Sc., M.D. London: Baillière, Tindall and Cox, 1937. Pp. xiv+210, with 153 illustrations. Cloth, 9×6. Price 34s.

This work is a detailed description of the anatomy of the lungs and will prove of more interest to the histologist than to the clinician. At the same time it is necessary to have a good general knowledge of the anatomy of the lungs and surrounding tissues. The division and directions of the bronchial tubes must be appreciated in order to conduct treatment by postural drainage. The relation of pulmonary lymphoid tissue to bronchi, blood-vessels and pleura is of interest because this tissue, which increases from childhood to old age, often serves as centres to which disease is carried by the lymphatics.

In man and in certain animals the pleura is thick and has septa running down into the lung and along them run branches of the bronchial artery, which on reaching the pleura break up into capillaries which unite to form branches of the pulmonary vein.

In animals with thin pleura there are no septa, and the pleura is supplied by the pulmonary artery except for a small zone near the hilum which gets its blood from the bronchial artery.

The flow of the lymph is from the lung to the pleura, and so pleurisy is the result of a pulmonary lesion and does not arise as a spread from the pleura.

The book, which is extremely well produced and illustrated, may be taken as the last word in the anatomy of the lungs, bronchi and pleura with their blood and lymphatic supply.

One chapter is devoted to an historical survey of the knowledge of the anatomy of these parts, and there is an excellent list of references.

Les Néphrites Auriques des Tuberculeux. By DENISE BOURGEOIS. Paris: G. Doin et Cie, 1937. 20 francs.

There is now an extensive literature dealing with the toxic effects of gold, among which the renal manifestations play an important and often a leading rôle. In this present volume, dealing with the latter, there are some twenty cases culled from various sources and also a brief review of this literature. It is pointed out that renal complications from gold occur in about 5 per cent. of those tuberculous patients who receive the drug, and that the risk is raised by giving it intravenously, or in big doses, or to those who have a serious pulmonary lesion or an antecedent history of nephritis. All this is already fairly common ground, and there is little added

here. In her classification of the various forms of renal disturbance from gold Dr. Bourgeois adopts the somewhat arbitrary scheme of a system based upon a mixture of symptomatic and pathological changes. To say the least this is an unstable makeshift, and though it may be true that to devise a reasonably scientific classification at the present time is impossible, she might have attempted to conform with modern views on renal disease in general. In the section dealing with the experimental aspects the effects of sanocrysin on the kidney in non-tuberculous animals are dismissed in less than two pages, though she makes the point that the predominant lesion is a destruction of the epithelium of the convoluted tubules, the glomeruli escaping. Treatment is so far unsatisfactory once the action has passed beyond initial stages. On the whole this book has most of the defects of French literature on medical subjects, with none of its sometimes brilliant compensations.

Chronic Miliary Tuberculosis. By CLIFFORD HOYLE, M.D., M.R.C.P., Assistant Physician to the Brompton Hospital for Consumption and Diseases of the Chest; and MICHAEL VAIZEY, M.B., M.R.C.P., First Medical Assistant and Registrar, London Hospital. London: Oxford University Press, 1937. Pp. 140.

Chronic miliary tuberculosis is a condition which has not long been recognised. In recent years more and more cases have been published and this book is a welcome addition to the literature of the subject.

After a discussion of the definition of the condition the authors describe a series of ten cases which have come under their personal observation. Details of clinical and radiological findings, history of onset and course of the disease are given and the series is one of the greatest interest.

A series of 110 cases are then analysed and two chapters are devoted to diagnosis and treatment.

The book is very well produced and illustrated with excellent plates and radiographs, and it concludes with a useful bibliography. It should find a place in the library of all those who are interested in tuberculosis.

The Elements of Medical Treatment. By ROBERT HUTCHINSON, M.D., F.R.C.P., Consulting Physician to the London Hospital and to the Hospital for Sick Children, Great Ormond Street. Bristol: John Wright and Sons, Ltd., 1937. Third Edition. Pp. 194. Price 5s.

The earlier editions of this work are well known to students, and they will find the same useful information in this one, which brings the book up to date without altering its purpose or scope.

Practical common sense is the keynote, and the reader is taught that medicine is an art as well as a science and that the patient is a human being and not a machine.

It is wise advice to avoid making too much of minor ailments. Constipation, we are told, is not a very serious malady which rarely makes it worth the patient's while to make drastic alterations in his diet or habits. It is simpler, less expensive and less troublesome to take a regular laxative and have done with it.

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The reader is warned that ultra violet light treatment must be used with caution in tuberculosis, although it is advisable in cases where the bones, joints, glands or peritoneum are involved.

The chapter on psychotherapy contains much practical information, and the author thinks that history taking is most important and should be a biography before starting treatment.

The final chapter describes certain medical operations such as blood transfusion, administration of rectal and intraperitoneal saline, paracentesis, venesection, cupping, etc.

The book is well produced and is full of helpful information and hints.

Histoire des Idées sur la Guérison des Cavernes depuis Laënnec. By ANTONIA CARLET, Ancienne Externe des Hôpitaux de Paris. Paris: Amédée Legrand, 1937. Pp. 74.

In this book the history of the theories as to the healing of cavities is traced from the original conception of fibrosing contraction to the more recent one of relief of tension.

The author points out that a cavity communicating with an open bronchus has a mean atmospheric pressure and is subject to the influence of the flow of air during inspiration and expiration. If the bronchus is blocked the air in the cavity will be absorbed so that it closes, but may re-open if the bronchus becomes patent again. Closure of the cavity is therefore dependent upon atelectasis.

The cavity has assumed a place of such importance in tuberculosis that this little volume will be read with great interest by all those who follow the modern views on the subject.

The Handbook of Tuberculosis Schemes for Great Britain and Ireland.

The ninth edition of this valuable little volume has just appeared. It is in effect a Tuberculosis Directory which is produced by the National Association for the Prevention of Tuberculosis, and can be obtained from their offices in Tavistock House North, London, W.C. 1, for five shillings.

The present edition has much additional data, including details regarding the days of the week and the hours during which dispensaries are open, X-ray facilities at hospitals and dispensaries, the addresses of all care committees, and the total tuberculosis death rate for each London Metropolitan Borough.

A brief note of each county and county borough in England, Wales, Scotland and Northern Ireland, the Irish Free State, Isle of Man and Channel Islands is given, and in this will be found the death rates from tuberculosis and from all causes, the population and industries of the country and the schemes adopted as regards tuberculosis, with the names of the chief administrative officer and tuberculosis officer.

Then follows a list of residential institutions with the number of beds and a note as to the type of patient—medical, surgical, early, advanced, etc.—eligible, and the nature of the institution, whether private, voluntary or under local authorities.

In the appendices statistics of tuberculosis death rates will be found and

a list of organisations affiliated to the National Association for the Prevention of Tuberculosis. Altogether this is a most useful reference book on which the Association is to be warmly congratulated.

The Control of Bovine Tuberculosis in Man. By NATHAN RAW, C.M.G., M.D., M.R.C.P., late British Member of the International Committee on Tuberculosis. London: Baillière, Tindall and Cox, 1937. Pp. viii+128, with 12 Plates. Cloth, $7\frac{1}{2} \times 5$. Price 6s.

This little volume is mainly intended to emphasise the danger of bovine tuberculosis, and to discuss the methods used to prevent it. The author suggests that the bovine tubercle bacillus may change into the human type, and with this opinion most authorities will disagree. It may seem to be a matter of small importance as to what particular name is given to a bacillus, but it is important to know whether a child infected with bovine bacilli can subsequently suffer from tuberculosis of the adult type as a result of the childhood infection.

The author is to be congratulated on his insistence of providing a pure milk supply, for there can be no doubt that, apart from actual deaths, much crippling occurs as the result of tuberculosis derived from milk, and there are several other diseases, such as scarlet and remittent fevers, which come from milk. The obvious remedy is not to drink milk, but this is hardly possible, since it is not only one of the cheapest but one of the most perfect foods.

Milk Products. By W. CLUNIE HARVEY, M.D., D.P.H., M.R.San.I., Medical Officer of Health, Borough of Southgate, and HARRY HILL, M.R.San.I., A.M.I.S.E., M.S.I.A., Sanitary Inspector, Borough of Southgate. London: H. K. Lewis and Co, 1937. Pp. 388. Price 16s.

This is a companion book to *Milk: Production and Control*.

It describes the ancillary uses to which milk may be put and the processes of manufacture. There are eight chapters, in each of which the food value, composition, sources of contamination, methods of making and of keeping the particular product are described. The subjects of the chapters are Ice Cream, Cream, Butter and Margarine, Cheese, Condensed Milk, Evaporated Milk, Dried Milk and subsidiary milk products such as Fermented Milk, Whey, Junkets, etc.

This book is essentially a public-health textbook, and contains a good deal of highly technical matter. At the same time description of the different types of milk, the value of ice cream, and the different food values of certain products will be of interest to the layman as well as the doctor.

The book is well written, produced, and illustrated, and forms a valuable addition to the literature on public health.

A Textbook of the Practice of Medicine. By Various Authors. Edited by FREDERICK W. PRICE, M.D., F.R.C.P., Consulting Physician to the Royal Northern Hospital, Senior Physician to the National Hospital for Diseases of the Heart. London: Oxford Medical Publications, 1937. Fifth Edition. Pp. 2,038. Price 36s. or 45s. (India paper).

This well-known textbook, which was first published in 1922, has proved so successful that it has already run into a fifth edition. The object and

scope of the work has remained unchanged, and the book includes sections on diseases of the skin, psychological medicine and tropical diseases as well as on the ordinary diseases usually found in medical textbooks.

In this edition new classifications of the varieties of Bright's disease have been made. The chapters on psychology, diseases of the spleen and reticulo-endothelial system have been re-written and there are many new articles.

In the section dealing with pulmonary tuberculosis the authors are to be congratulated on having compressed so much valuable information into so small a space. In these modern days, when such reliance is placed on X-rays in the diagnosis of tuberculosis, it is refreshing to find a detailed account of diagnosis, including the obsolete Calmette ophthalmic test, ending: "Finally, the X-rays may afford assistance in the diagnosis of early cases with doubtful signs, and may also help in the differential diagnosis of tuberculosis from other lung diseases with well-marked signs"; although it seems likely that many will think X-rays deserve definitely more credit. To advocate woollen underwear may also be regarded by the moderns as a little out of date, and some mention might have been made of chronic miliary tuberculosis.

The section on general tuberculosis which appears under the general heading "Bacterial Diseases" might be omitted, as it is impossible in so small a space to deal adequately with such a vast subject, and a description of tuberculosis of the various organs is given, that dealing with the skin being especially good.

There is an excellent account of the various forms of bronchitis, bronchiectasis and mycotic and other diseases of the lungs, including pneumonia.

The section dealing with diseases of the heart is particularly good and the clinical values and limitations of electro-cardiography are clearly explained, but the whole book is worthy of the highest praise, and this new edition more than maintains the high reputation acquired by its predecessors.

The edition on India paper makes the book about a quarter thinner and much lighter. It is an idea which might with advantage be copied by the producers of other large medical works.

Annual Report of the Ministry of Health for 1936-37.

The Eighteenth Annual Report of the Ministry of Health, covering the year 1936-37, contains an Introduction and seven Parts, consisting of chapters dealing successively with the Ministry and Public, Finance, Public Health and Assistance, Housing and Town Planning, Local Government Organisation and Finance, National Health Insurance and Pensions, and the Welsh Board of Health.

In presenting the Report, Sir Kingsley Wood, the Minister of Health, points out that, developing surely and certainly from early Victorian days, the public health and social services have now come to embrace the seven ages of man from the cradle to the grave. After referring to the striking progress in national health since the Ministry of Health was first established in 1919, the post-war housing achievement and accompanying changes for the better in living conditions and social habits, the various local health

services and the health insurance and contributory pensions schemes, Sir Kingsley turns to the achievements of the year 1936-37, in itself a good year for health, and proceeds:

"The setting up on a national scale of a public service of skilled midwives with detailed improvement of their existing maternity services by a large number of local authorities was designed to strengthen these services at their most vulnerable point—the mother's own life and health. Again, the measures in hand to extend the child welfare and school medical services upwards and downwards respectively by providing better attention for children too young to attend school and so improve their health still further, are intended to close this gap in the existing facilities. At the time of writing, proposals are before Parliament for closing another gap—that between the School medical service and entry into the health insurance scheme at the age of sixteen. Finally, mention should be made of the Act of Parliament, passed while this Report was in the press, extending the existing contributory pensions scheme so as to allow independent workers and professional and other persons of small means to insure for pensions if they wish to do so."

In conclusion Sir Kingsley pays tribute to the help rendered the Ministry by the support and informed criticism of the Press, and the assistance of the army of men and women, lay and professional, who give their time and energies to the service of public health and welfare.

The Ministry and the local health authorities have direct relations with the very large numbers of the general public. Close relations are maintained with the general press, film organisations producing health films, and other media of public information.

There is great need for more Health Education, and a six months' campaign to encourage the wider use of local health services will begin in October. A permanent Health Exhibition is also being planned, which it is hoped to show for the first time at the Empire Exhibition in Glasgow next year.

Tuberculosis mortality was the lowest on record.

Deaths:	1936.	1935.	1931.
Pulmonary T.B.	23,801	24,603	29,658
Non-pulmonary T.B.	4,467	4,598	6,160
Death rate per million living:			
Pulmonary T.B.	583	605	742
Non-pulmonary T.B.	109	113	154

There were 121,951 X-ray examinations in connection with the T.B. Dispensary service in 1936, compared with 63,823 five years previously.

OBITUARY

Dr. David Alexander Stewart, Superintendent of Manitoba Sanatorium, Ninette, died at the Winnipeg General Hospital after a long illness on February 16, aged sixty-three.

At Ninette there are 250 beds; a Central Tuberculosis Clinic has been opened at Winnipeg; travelling clinics go out into the highways and byways of the province examining tuberculosis suspects and contacts; the death rate from the disease has been cut to one-fifth, and the menace to children from that source reduced to one-tenth.

Remarkable as were Dr. Stewart's activities in this connection, they did not limit the range of his interests. Medical history and the history of the fur traders of the Canadian North-West found him an authority, and one of his special hobbies was to trace the sites of the forts of the Hudson Bay, North-west and XYZ companies along the Assiniboine and Souris Rivers. For two years he was president of the Manitoba Historical and Scientific Society and he was also a member of the Historic Sites Commission.

His published work consisted of numerous papers reflecting the wide range of his interests, and marked with vigour and charm of style.

He was also keen on art and did creditable work in dry point and water colours. At a recent exhibition of the Winnipeg Sketch Club four of his pictures were shown, one of them a view from his hospital window of the city atmosphere at 40 degrees below zero.

He will be sadly missed in the life of his province, in every phase of which he was intensely interested.

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